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THE COAL AND IRON RECORD.

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Correspondence and general communications and books for review should be addressed to MR. ROTHWELL. Business communications should be addressed to the Secretary.

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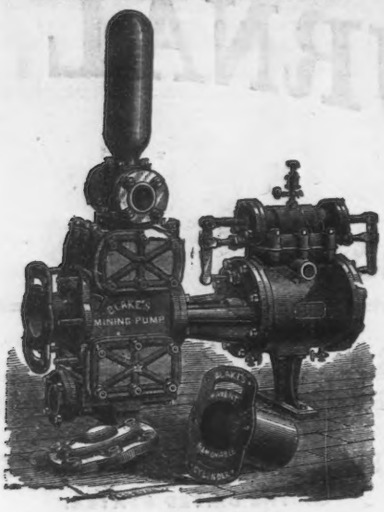

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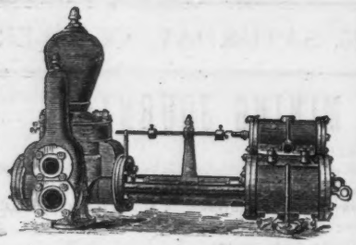

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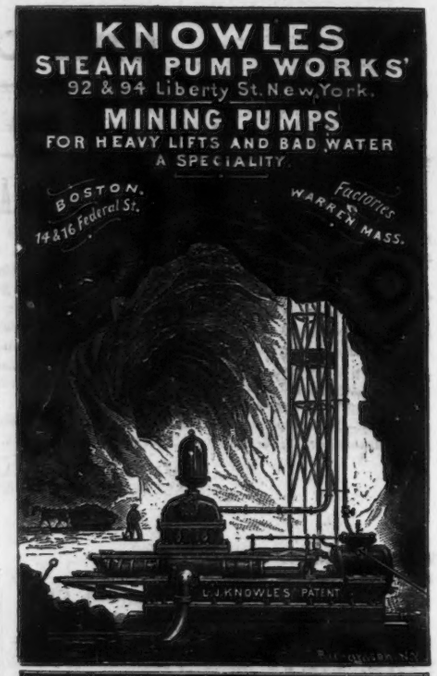

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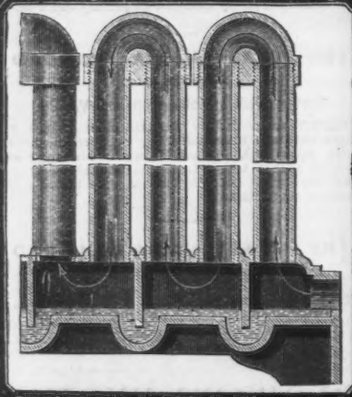

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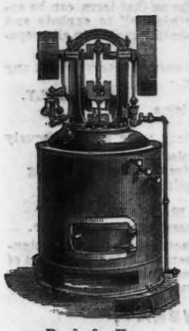

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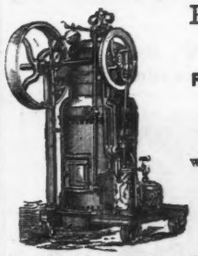

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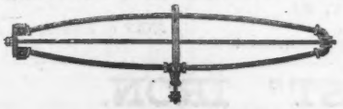

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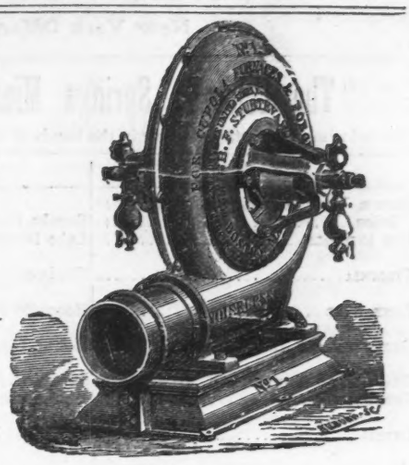

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Extract from report of Committee of Inv. Engs. appointed by Franklin Inst. to examine H. & B.'s new Transit [Dec. 1871]: "It exhibits several novelties of construction which, in the opinion of the committee, render it superior to those now in use, and in its opinion the deviations which they have made from the common styles of Transit are decided improvements."

JOHN C. TRAUT TL.D., Chairman.

Descriptive and Illustrated Price List sent Post-paid, on Application.

THE ENGINEERING AND MINING JOURNAL.

RICHARD P. ROTHWELL, C. E., M. E.
ROSSITER W. RAYMOND, Ph. D. } Editors.

NOTE.—Communications relative to the editorial management should be addressed to Mr. ROTHWELL. The articles written by Mr. Raymond will be signed with a star.

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Meeting of the Institute of Mining Engineers.

THE wonderful success of the American Institute of Mining Engineers is again evidenced by the full attendance, some fifty members having been present at the Cleveland meeting, just terminated. The increase in membership is something very remarkable, about *one hundred* new members having been elected, the list, which we shall publish next week, including the representatives of nearly every important iron or steel works in the country which was not already represented in the Institute. This practical recognition of the influence and value of the Institute is exceedingly gratifying, and is the strongest kind of testimony to the wisdom of the policy which has governed this society since its establishment. The opening address of the President, A. L. HOLLEY, Esq., was one of the most able and practically valuable essays that has ever been given in the English language on the subjects of which it treats, and it will, undoubtedly, attract a great deal of attention, and, we believe, will be followed by much improvement in our metallurgical works.

Our space does not allow us even to enumerate, this week, the long list of papers that contributed to make the Cleveland meeting one of the most instructive as well as agreeable reunions of the Institute.

Abstracts of Papers from Foreign Periodicals.

WE have, for some time past, been publishing a very valuable series of articles translated from foreign periodicals, to which we have given credit. We are indebted to the Institution of Civil Engineers of London, and its courteous and able Secretary, JAMES FORREST, Esq., for these translations. They are published by permission of the Council, and edited in the most careful and able manner by Mr. FORREST.

The labor and expense of making these epitomes of all that is of interest in foreign periodicals are very great, but are fully justified by the value of the information obtained. We have great pleasure in acknowledging the enterprise and courtesy of the Institution to which our readers are indebted for so much valuable information.

Meeting of the Gas Light Association.

IN our last number we promised our readers a report of the meeting of the Gas Light Association. We regret that we have again to postpone it this week. As we have already stated, we had made arrangements for a full special stenographic report of the meeting, but certain of the officers of the Association, through some unaccountable fear that the public might learn something to the disadvantage of the Gas Companies, refused to allow us to make the report. We then concluded an arrangement with the *Gas Light Journal*, to make a joint report, in consideration of our defraying one-half of the expenses; but, upon asking for our copy of the proceedings, to our great surprise, our contemporary failed to carry out their part of the agreement. We regret the disappointment to our readers; but they shall have a portion of the report in a future number, and not only that, but a review of the extraordinary policy of the Gas Light Association—or at least of some of its influential members—and the causes that have prevented its earlier publication in this JOURNAL.

The Fire in Virginia City, Nev.

ABOUT daylight on October 26th, a fire broke out in Virginia City, which, in the course of a few hours, destroyed nearly the entire business portion of the city. Starting at a point near the southwestern limit of the most thickly settled portion of the city, it spread rapidly eastward towards the ravine, in which the hoisting works and mills of some of the most prominent mines are located, destroying on its way hotels, churches, newspaper and express offices, and the county buildings. The railroad depot, the splendid and but lately completed hoisting works of the Virginia Consolidated, the large mill of the same company, that of the California, and the Ophir hoisting works, all fell victims to the flames, which were fanned by a strong gale. The fire was communicated at one time to the Ophir shaft, but was checked before doing much damage. The new C. and C. hoisting works, which are being erected by the Virginia Consolidated and the California Companies, jointly, have fortunately been saved.

The direct loss by the fire is estimated at between three and four millions of dollars. What the loss may be, which is caused by the necessary stoppage of some of the best and most productive mines for some time to come—in the best case not less than two months—cannot well be calculated. But if we remember the extreme energy of the managers of the Consolidated Virginia, California and Ophir, and the abundance of means at their command, we may expect that the resumption of regular work, and the consequent heavy production of gold and silver, will not be delayed long enough to be seriously felt in the markets of the world.

The reported flooding of several of the Washoe mines (which, however, by later dispatches dwindles down to comparative insignificance,) and the burning of the mining works above noted, caused a panic at the San Francisco board, the details of which are given in our financial report.

Steam Engine Efficiency.

"THE HARTFORD STEAM BOILER INSPECTION COMPANY has lately decided to add to its already large business a new department, the object of which shall be the investigation of steam engine efficiency, with reference to the consumption of fuel. The Steam Engine Indicator will be used in connection with this department, and every appliance of value known to the profession of steam engineering will be brought into use."

This is a move we welcome, for it will, unquestionably, exert a great influence in improving the efficiency of steam engines. What is needed is to ascertain and publish reliable statements of the actual work done in the engines in use, and when it is shown that some of them consume, not twice or three times, but ten times, as much fuel as would be required to obtain the same work from good machinery and boilers, it will induce those who pay for them to think more of the matter than is now generally done. If engines were bought and sold by actual effective horse-power yielded per pound of coal consumed, we would have a means of comparison which is now greatly needed, and any move that will make known the relative economy of the engines and boilers we have in use should be welcomed and encouraged by all users of steam power.

Advice to Inventors.

THE *Iron Age*, in a long article, every sentence of which is loaded with good sense and aimed with accuracy, discourses of inventions and inventors, and says, among many good things, the following which seem to us the best and most timely:

"In almost all directions, progress has been pushed up to a line which the chance inventor rarely succeeds in crossing successfully."

"The radical defect of most inventions now-a-days is that they are prematurely made public by men who have not given them proper study."

"It is the habit of would-be inventors to essay the easy problems, already solved satisfactorily, and shirk those which are attended with serious, though not insurmountable, difficulties."

These propositions our contemporary illustrates, from the current experience of industry among us, in a very interesting and effective way. We are but condensing the substance of its article when we offer the following summary of the things which an inventor should know, in order to secure success for his device. We may be pardoned if, for the purpose of attracting the eye as well as addressing the reason, we arrange the propositions in tabular form, after the fashion of the blackboard lessons which are now so popular in Sunday-schools:

BLACKBOARD LESSONS FOR INVENTORS.

An Inventor should know what—	This requires, in each art, knowledge of	In the absence of which, the invention may be
Needs to be invented.	Practice.	Unnecessary.
Has been invented.	History.	Inferior.
Can be invented.	Science.	Impracticable.
To claim as invented.	Language.	Insecure as property.

A certain class of inventions, which belong properly to the domain of fancy, cannot be subjected to any rules. The men who make fortunes by patent medicines, or comical toys, or trifles whose characteristic is that they "take," and "become the rage," are simply wits—only their clever things are wrought in matter and not in words. One might as well instruct people how to be funny, as lay down laws for such geniuses. But professional inventors of this class are like the professional funny folks—they say a great many stupid things for one good one.

*

Engineer Cook on Empiricism in Pumping Engines.

THEY have a sensible engineer at Toledo, Ohio. He does not want that city to go into the business of experimenting with pumping engines; his remarks contain such sound advice that we commend them to the consideration of the trustees of many other places than Sandusky. Of all things the water supply of a city should be put beyond the possibility of failure or mishap from defective machinery; yet we frequently find the trustees appointed to decide upon such important questions totally ignorant of the first requisites of good machinery, and yet so self-opinionated, as to reject the opinions of experts. The trustees of the Sandusky Water Works appear to be of this class, for, judging from Engineer COOK'S letter, which we take from the *Sandusky Register*, they have proposed to use some "new-fangled machinery, having no antecedent record, etc." There are few engineers who have not had some such experience as that which Engineer COOK is now going through with. It is frequently a waste of time to endeavor to enlighten these non-professional experts, but we commend Engineer COOK'S advice as deserving their most careful consideration, and if they desire to find

the history of the adoption of untried "new-fangled" machinery in city water works, they will readily find it illustrated in many parts of the country by expensive failures and endless annoyance and disappointment.

TOLEDO, Ohio, September 28, 1875.

To the Trustees of Sandusky Water Works:

GENTLEMEN—In designing and recommending for your consideration and adoption a system of water works, which I consider to be demonstrably first-class in all its appointments, and actuated throughout by an honest desire to promote the best interests of your city, I not only feel a professional, but also a personal, solicitude for the successful consummation of this, your city's greatest enterprise.

Paramount, perhaps, to all other considerations, may be named a judicious selection of pumping engines. This question is so inseparably linked and interlocked with almost every system of water supply, that a failure in this respect becomes a permanent militant against economy, utility and safety of the entire service.

It, therefore, seems to come within the purview of my official duty, to earnestly warn you against the adoption of all untried experiments in your pumping service, and to respectfully protest against the adoption of new-fangled machinery, having no antecedent record, and without even the prestige of experience in its design.

Imitations of successful pumping machinery have been often tried, without a single known satisfactory result; on the other hand, almost countless and melancholy failures mark the history of such experiments. Can you, therefore, afford to jeopardise your own reputation, your city's interests, and the interests of your tax payers, by adopting an untried mechanical device; thus acting not only at variance with your own better judgment, and the caution so essentially characteristic of all successful business men, but also ignoring the expensive lessons of history, which from similar causes have been foisted upon neighboring cities?

The communication and the warning here contained are prompted by the undenied, and (I think) undeniable fact, that the first attempts in designing and constructing large pumping engines have, without an isolated exception, proven failures, in greater or less degree.

Many of the brightest mechanical minds, and the best appointed steam engine manufactories and machine shops, have been brought in requisition, with uniformly inferior results, and not unfrequently gigantic failures—proving, it would seem almost beyond a peradventure, that perfect success in the construction of machinery characterized by so many intricate elements, can only be attained by a thorough knowledge of hydraulics and mechanical engineering, in conjunction with long, persistent, and patient experience.

Very respectfully, J. D. COOK, Chief Engineer.

NEW PUBLICATIONS.

WALKER'S *Statistical Atlas of the United States*, one of the most beautiful and useful publications which have ever been issued by the government, appears also, in a handsomely bound form, from the establishment of Mr. JULIUS BIEN, who did the work of printing and lithographing for the Congressional edition, and was authorized to sell an edition for his own profit besides. He deserves to get a handsome profit from it; for his part of the work is worthy of the authors', and both are worthy of the highest praise. The *North American Review*, in noticing this book, bestows upon Professor FRANCIS A. WALKER a hearty endorsement, declaring him to be distinguished alike in war and in peace, and to have manifested in the several civil offices which he has filled—as head of the Bureau of Statistics, Superintendent of the Census, and Superintendent of Indian Affairs—an admirable combination of scientific and executive ability. This *Atlas* is practically a graphic or pictorial *resumé* of the Census of 1870, accompanied with a collection of essays from various hands on the physical, vital, social and political features of the United States. Many of Mr. BIEN'S beautiful maps are well suited to be enlarged into charts and employed by lecturers and teachers. Nothing could more forcibly represent to an audience or a class the great facts of our condition, resources and history as a nation.

WATER AND WATER SUPPLY. By W. H. CORFIELD, M. A., M. D. New York: D. VAN NOSTRAND, 1875.

THIS volume, No. 17 of VAN NOSTRAND'S *Science Series*, contains the substance of the lectures given at the Chatham School of Military Engineering, in England, by Prof. CORFIELD, of the University College, London, and first reprinted in this country in the *Engineering Magazine*. The lecturer occupies the chair of hygiene and public health in the college mentioned; and it is naturally from this standpoint, rather than that of engineering, that the subject is considered, although many interesting details are given, in a plain and popular style, concerning the great water-works, wells, aqueducts, etc., of ancient and modern times. We have never before found so large an amount of valuable information and wise suggestion on this subject condensed into so small a space or conveyed in so clear and pleasant a way. The book is a model of "popular science," and in the handy pocket-size characteristic of VAN NOSTRAND'S *Science Series*, it ought to be widely circulated. A study of its simple discussions would have saved the engineer of one of our New York reservoirs, the other day, from propounding the amazing doctrine that the reservoir needed no outflow to keep the water pure, because half a million gallons were evaporated from its surface daily, and an equal amount flowed into it, thus giving a constant change of water, and insuring its purity!

HANDBOOK FOR CHARCOAL-BURNERS. By G. SVEDELIUS. *Translated from the Swedish* by R. B. ANDERSON, A.M., *Professor of Scandinavian Languages in the University of Wisconsin Edited, with Notes, by* W. J. L. NICODEMUS, A.M., C.E., *Professor of Civil Engineering in the University of Wisconsin.* New York: JOHN WILEY & SON, 1875.

This book, a handsome duodecimo of 217 pages, with 23 wood-engravings, is dedicated to Gen. DANIEL TYLER, of the U. S. Army, "to whom the readers are indebted for its publication in the English language." What with the labors of the translator and the editor, and this implied endorsement from high authority, the work appears, it must be confessed, under flattering auspices; and we are still further prepared for its perusal by the declaration of Prof. NICODEMUS, in his preface, that it is probably the best treatise on the manufacture of charcoal that has ever been written. But this is not all. The Swedish original is the result of a prize competition, instituted by the Government of Sweden in 1862, the best two essays offered for competition having been handed over to Mr. SVEDELIUS, who was employed to make out of these materials, and any others that he might collect, a treatise on charcoal-burning.

One of the most noteworthy evidences of the advancing influence of science is the increasing number of books in which the manipulations of various handicrafts are discussed, explained and criticized upon scientific principles. Facts and precepts are now found in books which were until recently the secrets of skilled workmen only, and were, in the minds of even the most skillful workmen, mixed with vast amounts of error, superstition and absurd tradition. It is a matter of no small difficulty to collect and arrange the results of experience in a trade, rude and without a literature, like charcoal-burning. The men who have in daily practice faced the facts are likely to be incompetent to report them correctly, or reason upon them justly. We surmise that in the present case the two treatises rewritten by Mr. SVEDELIUS may have proceeded from practical workmen, and contained much valuable information, so alloyed with error or so unsystematic in form as to require refining and recasting. At all events, this process is the very one best calculated to produce a truly useful and trustworthy manual; and such, in a high degree, we are glad to find the work before us, which, though small in compass, is the product of many minds, and will be welcome alike to the student and the workman.

It is well known that the decreasing quantity of available timber for charcoal is a serious matter in Sweden, because that country depends on charcoal for the reduction of its magnificent iron ores. It is well to economize fuel by all possible improvements in metallurgy and in the utilization of heat; and much has been done in this respects—so much, indeed, as to warrant the opinion that the most important place for economy now requiring attention is the production of the fuel itself. The waste of coal in mining, and of timber in coaling, is, perhaps, the largest single item of loss in manufacturing industry. In the case of charcoal, and particularly of the manufacture of charcoal-irons, this consideration is so pressing as to be recognized at once. We have here to deal with a question which does not merely affect future generations, as does (in this country) the waste of anthracite or bituminous coal. The United States can show already innumerable idle stacks, which have exhausted the supply of fuel once furnished by the regions around them. Economy in the production (including, as it does, superiority in the quality) of charcoal means longer life and larger profit to many an enterprise of this class.

Prof. NICODEMUS has added such notes to the original treatise as adapt it for American use; and the translator's work has been intelligently performed. Together with PERCY'S new volume on fuels, the book should be in the hands of all who desire to understand the principles of this important art; and, since the coal-burners of the United States by no means constitute, as they do in many foreign countries, an exceptionally illiterate and degraded class, we see no reason why they should not, as well as students generally, avail themselves of so excellent a manual as this.

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Remarkable Runs of the Lucy and Isabella Furnaces—Successful Introduction of Natural Gas into Pittsburgh.

BY OUR SPECIAL PITTSBURGH CORRESPONDENT.

THE past two weeks have again brought into notice the Isabella and Lucy furnaces of this city. Up to that time, the Isabella No. 1, an 18-foot furnace, had made the largest run of iron in a day or week, that had ever been made in this country, the largest week's run being 702½ tons, and the largest day's, 105. During the week ending October 16, Isabella No. 2, a 20-foot furnace, made 714½ tons, a little over one-third being No. 1 foundry, and the balance mill—no white or mottled being made. The largest day's run was 112½. Last week, this same furnace made 710½ tons. These runs have not been "spurts," but the furnace has been gradually coming up to her work for a number of weeks past, gaining each week some 10 to 20 tons on the previous week's work. This furnace is 20×75, blown by two engines, 84-inch blast cylinder by 4-foot stroke, through 7 five-inch tuyeres, 2½ to 3 lb. blast pressure. The ore used is Lake Superior, with a small percentage of Lake Champlain. The coke is from washed coal from the company's own mines at Blairsville, at the intersection of the Pennsylvania and West Penn. Railroads. The amount of coke used per ton of pig made is difficult to ascertain, as the furnace managers are chary of giving information on this point. From a gentleman who has good advantages for knowing, we learn that the amount of coke used per ton of pig iron is less than 65 bushels, which would be less than 2600 lb., or, as the English would calculate, 23.21 cwt. We understand that this includes an allowance for waste, of some 8 or 10 per cent.

Surprising as are these results, measured by the number of tons made per week, the Lucy furnace has done still better. This is a single stack, 20×75, with blast engines, 84 inches × 5-foot stroke, blowing through five 8-inch tuyeres, with a blast pressure, during the week to which we are about to refer, of 7 lb. During this week three blast engines were used, at least part of the time. The ore used was Kloman and Republic, both hard Lake ores and roasted mill cinder. The following is the work in detail for the week ending October 23:

	Gray Forge.	No. 1 Foundry.	Total. Pounds.	Total. Tons.
Saturday	225,990		225.990	1458 99.— 2268
Monday	233 360		233,360	2024 102.— 2268
Tuesday	261,210		261,210	0390 115.— 2268
Wednesday	203,660	40,990	244,650	1974 107.— 2268
Thursday	252,390		252,390	0642 111.— 2268
Friday	223.910	28,400	252,310	0562 111.— 2268
Saturday	207,660	50,840	258,500	2216 113.— 2268
Total	1,608,180	120,230	1,728,410	1094 762.— 2268

The week before this, only 680 tons had been made. This week the furnace has changed to Bessemer iron, so that it is impossible to say whether it is a "spurt" or not. The coke used is one-third Connellsville and two-thirds from their own coke works, at Carpenter's Station, on the P. R. R., it being made from crushed slack. There is the same difficulty in getting the amount of coke per ton of pig as in the case of the Isabella, but we learn that it is fully 80 bushels, which would be 3200 lb. or 28.57 cwt.

These runs, if they are not mere "spurts" obtained at the expense of the furnace and the fuel, are wonderful. That they are not this, in the case of the Isabella, seems to be shown from the facts given above, and that the Lucy will be able to average over 700 tons we do not doubt; but at present, though she has made some 48 tons more than the Isabella, it has been only for one week. An average of a month, ending last Saturday, would show that the Isabella had done the better work.

Remarkable as these runs are, they have, in quantity, been equalled in other parts of the world. Mr. I. LOWTHIAN BELL, in a letter to the *American Manufacturer*, under date of June 26th, states that a Lancashire furnace, 55x18, had made 700 tons per week, and there is a furnace on the Continent, in Belgium, we believe, that has made 770 tons per week; but the latter is 23 feet in the boshes. The results of the working of these Pittsburgh furnaces can but be watched with interest, and it would certainly be a graceful and generous contribution to the literature on this subject, if the proprietors would permit all the facts to be made public.

Another subject that has attracted a great share of attention, the past week, in iron circles, has been the successful introduction into the city of natural gas from the Butler County oil regions, by means of pipes. About a year ago, a well was bored at a place called Lardners Mills, some seven miles back of Tarentum, on the Allegheny river. The well was a test well for oil, and was in advance of any yet bored, that is, it was further from the original oil territory towards Pittsburgh, or, as oil men term it, it was beyond the "front." At a depth of something over 1200 feet, a large vein of gas was struck, which poured out through a 5⅛ inch pipe with a pressure of about 110 lb. per square inch. For months this was allowed to go to waste, though only 18⅛ miles from the point to which it has been brought. Last summer, a company was formed known as The Natural Gas Co., Limited, which bought the well and began arrangements for bringing the gas to the mills of Messrs. SPANG, CHALFANT & Co., and GRAFF, BENNETT & Co., the former some six miles from the city proper, and the latter four miles. The gas, as it comes from the well, is carried into a large boiler, entering one end at the bottom, the discharge being from the top at the other end. The object of this is to allow the salt water, which always accompanies the gas in greater or less quantities to drain off, which it does and is discharged through a small stop-cock at the bottom of the boiler, opposite the end at which the gas enters.

The gas is led from the boiler through a six-inch pipe over the country and along the roads to the mills named above. For protection from the frost it is buried about three feet.

It was first let into the pipes on Friday, the 22nd, and in 36 minutes after it was turned on at Butler it had reached Etna, SPANG, CHALFANT & Co.'s mill, and was discharging gas enough to make a flame from 25 to 30 feet high.

On Monday of this week, another test, to show the amount that flowed through the pipe, was made. Four lengths of three-inch pipe were screwed into the six-inch main at Etna, and one at GRAFF, BENNETT & Co.'s. The result was very satisfactory. Each of the pipes gave a flame 20 to 25 feet in length, and from 6 to 8 feet in width.

No analysis of this particular well has ever been made, but those made at other wells in its vicinity show them to be hydro-carbons of composition C^4H^6, with some carbonic acid and carbonic oxide. Prof. OTTO WUTH of this city, the well-know chemist, gives the following facts concerning the Burns gas well, which is situated but a few miles from the Harvey well, which is the one under consideration.

PITTSBURGH, Pa., October 18, 1875.

Messrs. Kirk & Di'worth:

GENTLEMEN—At your request I have visited your Burns Gas Well, at the Duffy farm, in order to ascertain the quality of the gas and the amount produced, and now give you the result of my researches.

The gas itself is almost altogether hydro-carbon of the composition C^4H^6, mixed with but little oxyde of carbon and carbonic acid; its illuminating power is equal to seven and a half candles, coal gas being about sixteen. Its heating power is about 25 per cent. higher than that of good bituminous coal of equal weight. Specific gravity of the gas is 1.56.

The pressure at the well—five and five-eighths inch tube—being one hundred pounds per square inch, by actual experiment, the pressure of the gas, when conducted through a two-inch tube from the well to Freeport, fifteen miles, was reduced from two hundred pounds to one hundred and twenty-five pounds. It is, therefore, safe to assume that, when starting with a pressure of one hundred pounds and conducted through a five and five-eighth-inch tube to Pittsburgh, thirty-five miles, the loss by friction will not be more than one-half, so that the gas has a pressure of fifty pounds per square inch at Pittsburgh.

The velocity at which the gas at the pressure rushes into the air, is in round numbers 1,700 feet per second. This number multiplied by the area of the tube, seventeen square feet, gives 289 cubic feet per second, or 17,340 cubic feet per minute, or, in round numbers, one million of cubic feet per hour.

13.072 cubic feet of air weigh one pound.

8.5 cubic feet of gas weigh one pound.

1,000,000 cubic feet of gas weigh 58.7 tons.

The amount of gas per day will be at the rate of 1,408 tons. If you take into consideration that, for furnace use, the combustion of the gas will be much more complete than that of bituminous coal, and the absolute heating effect is twenty-five per cent. greater, when the combustion is complete in both cases, you can be sure that the above figures are, if anything, too low. Yours, respectfully,

O. WUTH.

We have written of this at length, as we are confident that gas can be obtained by boring at many places. If we consider the territory comprised within the limits of gas wells already found, it will be found to be much greater than is generally supposed. Beginning in the oil regions and passing to Fredonia, New York, to Erie, Pa., Cleveland, down to Cincinnati, up the Ohio to Scioto Co., Ohio, and up still further to Rochester and Beaver Falls, Pa., and up the Monongahela to McKushard, Pa., all through this territory gas in considerable quantities has been found. We do not believe that it will be found at all points comprised within these limits, but it can at many places. When active operations in its use shall have been begun in this city, we will give your readers further information on this point.

The labor question is still in abeyance, and at present writing there is every prospect of a dead-lock. We do not anticipate either a lock-out or a strike, but we look for a partial suspension of many mills. Orders are very light and not remunerative. The Western Iron Association meets in this city, Thursday of this week, and something may be done.

Tempered Glass.

BY PERRY F. NURSEY, C. E.

A CONSIDERABLE degree of well-merited attention has of late been directed toward an invention which may be justly termed remarkable, even in these days of startling discoveries, inasmuch as it is one which promises to effect a complete change in the physical character of glass. This invention is the toughening process of M. FRANÇOIS ROYER DE LA BASTIE, by which the natural brittleness of ordinary glass is exchanged for a condition of extreme toughness and durability. And this invention is perhaps the more remarkable in that it does not emanate from one engaged in, or practically conversant with, the manufacture of glass; nor is the discovery due to one of the great lights of science of our day; neither was it the result of a happy momentary inspiration. On the contrary, M. DE LA BASTIE is a French private gentleman of fortune, residing in his native country—who, however, is given to the study of scientific matters. He was educated as an engineer, but his position and means rendered it unnecessary for him to follow the profession into which he had been initiated. He, however, is fond of experimenting in matters relating to engineering, and among other things he, some years since, conceived the idea of rendering glass less susceptible of fracture, either from blows or from rapid alternations from heat and cold. The early training of his mind naturally led him to look to mechanical means for the accomplishment of this end; and he, in the first place, set himself a purely mechanical problem to solve. He thought—as did Sir JOSEPH WHITWORTH with regard to steel—that by submitting glass, when in a soft or fluid condition, to great compressive power, he should force its molecules closer together, and, by thus rendering the mass more compact, the strength and solidity of the material would be greatly increased. This was not an unreasonable line of argument, inasmuch as the fragility of glass results from the weakness of the cohesion of its molecules. Success, however, did not follow experiment, and the mechanical problem was laid aside when unsolved.

M. DE LA BASTIE, however, continued to regard the question from an engineering point of view, and turned his attention to another method of treatment. Aware that the tenacity of steel was increased, and that a considerable degree of toughness was imparted to it, by dipping it, while hot, into heated oil, he experimented with glass in a similar manner. The results were sufficiently successful to encourage him to persevere in this direction, and, by degrees, to add other fatty constituents to the oil-bath. Improved results were the consequence; and they continued to improve until at length, after several years of patient research and experiment, DE LA BASTIE succeeded—with a bath consisting of a mixture of oils, wax, tallow, resin, and other similar ingredients—in producing a number of samples of glass which were practically unbreakable. As may be supposed, there were other conditions upon which success depended besides the character and proportions of the ingredients constituting the bath. M. DE LA BASTIE, not being a glass-manufacturer, purchased sheets of glass, as well as glass articles, which he heated, in a furnace or oven, to a certain temperature, and transferred to the oleaginous bath, which was also heated to a given temperature. These questions of relative temperature, therefore, had to be worked out; and DE LA BASTIE had further to determine, very precisely, the condition of the glass most favorable for the proper action of the bath upon it. This he found to be that point at which softness or malleability commences, the molecules being then capable of closing suddenly together, thus condensing the material when plunged into a liquid at a somewhat lower temperature than itself, and inclosing some portion of the constituents of the bath in its opened and susceptible pores. Having determined all these conditions, and constructed apparatus, M. DE LA BASTIE was enabled to take ordinary glass articles, and pieces of sheet-glass, and to toughen them so that they bore an incredible amount of throwing about and hammering without breaking. Just, however, as DE LA BASTIE had perfected his invention, he lost the clew to success, and for two years he was foiled in every attempt to regain it. There was the hard fact staring him in the face, that he had succeeded in depriving glass of its brittleness, as shown by specimens around him; but there was the harder fact before him, that he had lost the key of his success. Nevertheless he labored on, and at the end of the period above mentioned, he had the satisfaction of finding all his anxieties at an end; his toils were requited by the re-discovery of his secret. He has since worked at it most assiduously, and has now brought it into practical working order, rendering the process as certain of success as any in use in the arts and manufactures in the present day.

As already observed, M. DE LA BASTIE is not a glass-manufacturer; he therefore had to re-heat glass articles when toughening them. It, however, by no means follows that the toughening process cannot be applied in the course of manufacture, thus avoiding re-heating. On the contrary, it not only can be, but has been, applied at glass-works to glass just made, and so saves the costly and time-absorbing process of annealing. But, for reasons stated, M. DE LA BASTIE had to apply the process to the manufactured article; and the method adopted, and the apparatus used in its application, next merit attention. In the first place, the glass to be toughened had to be raised to a very high temperature—the higher the temperature the better—the risk of breaking the glass

being thereby reduced, and the shrinkage or condensation being increased. It was, therefore, advantageous, and often necessary, to heat the glass to the point of softening; but in that condition glass articles readily lost their shape, and had to be plunged into the bath almost without being touched Then came another difficulty—that of preventing an already highly-heated combustible liquid taking fire upon the entrance of the still more highly-heated glass. The latter difficulty was met by placing the tempering bath in direct communication with the heating oven, and inclosing it so as to prevent access of air; and the former by allowing the heated glass articles to descend quickly, by gravitation, from the oven to the bath.

The apparatus used by M. DE LA BASTIE is shown in the accompanying illustrations, in which Figure 1 is a vertical section of furnace for annealing glass objects, and Figure 2 a sectional plan of the oven for annealing flat plates. The working oven *a*, is heated by a furnace *b*. The bottom of the oven, *c*, and the slope to the bath, are made in one piece of refractory material, and are very smooth on the surface. At the side of the oven is a preparatory oven, communicating by a passage in the separating wall. In this oven the glass is partially heated before being placed in the main oven, *a*. The products of combustion are carried away in the direction of the arrows through the chimney. When the oven, *a*, is sufficiently heated, the ash-pit and fire-doors

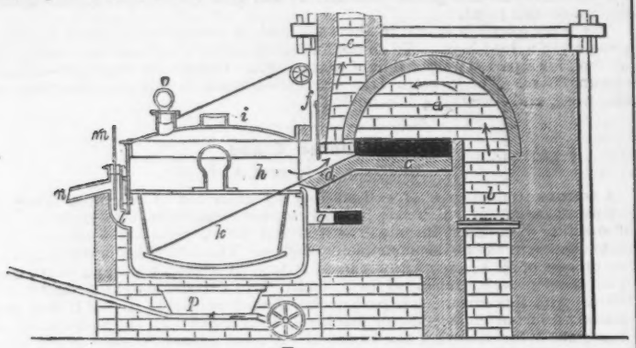

FIG. 1.

are closed, and rendered air-tight by luting, and the fire is maintained by small pieces of fuel introduced by a hole in the fire-door. The draught is then stopped by lowering the chimney-cap, or closing the damper. The vertical damper *f*, is then raised, so that the flame passes by the flue, *g*, to a second chimney, passing thus along the slope and heating it, and also opening communication from the oven, *a*, to the bath, *h*, which is filled with the oleaginous compound. It is covered from the external air by a lid, and within it is a basket of wire gauze, *k*, hung from brackets. A tube, *l*, contains a thermometer, *m*, to indicate the temperature; and by this tube the contents of the bath may be added to, or any excess may overflow by the discharge-pipe, *n*. A plug, *o*, on the cover may be removed to observe the interior, without entirely uncovering the bath. A fire-truck, *p*, charged with live fuel, heats the bath to the desired temperature. The glass is introduced into the preparatory oven by an opening in the outer wall, and thence it is moved through a second opening on to the floor of the oven, *a*. The workman who watches the glass through a spy-hole, when he finds it at the proper heat, pushes it by an iron rod to the slope, *d*, whence it slides into the bath and is received on the basket, *k*. When the glass has cooled to the temperature of the bath, the lid is removed, and the basket, *k*, is raised out of the bath with the tempered glass.

In tempering sheet-glass the arrangements of both oven and bath are slightly modified, as shown in Fig. 3. In place of the sloping exit for articles from the

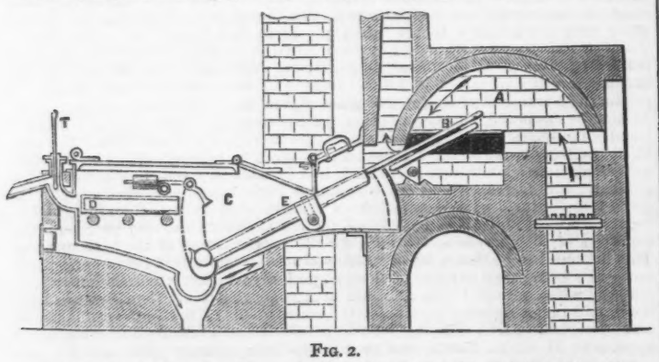

FIG. 2.

oven to the bath, M. DE LA BASTIE has a rocking table, E, which is hinged underneath to the mouth of the oven, and which also forms the floor of the oven. When the glass has been sufficiently heated, the workman, by means of a lever, tilts the table, and the glass slides gently down an easy incline on to a table set at a corresponding incline in the bath. If it is not of importance that the transparency of the glass should be preserved, no special precautions are taken to prevent the dust from the furnace settling on its face. Where, however, clearness is required, the glass is heated in a muffle, perfect transparency being obtained. The process of tempering or toughening, exclusive of the time required for heating the glass, occupies but a minute or so, the glass being immersed in the bath and at once withdrawn and set aside to cool. The cost per article, as may be supposed, is merely nominal.—*Popular Science Review.*

TO BE CONTINUED.

The Gold Diggins of Alaska Territory have been worked the past summer with increased energy and with quite satisfactory results. The principal locations are on Nigger Creek and its tributaries, and have furnished employment to nearly a thousand miners. Prospecting parties have pushed their way up the Stickeen River, where gold has been found in quantities sufficient to pay the men between six and eight dollars per day. Other diggings have been found on the coast, but the exact location is a secret, at present known only to the discoverers.

The Construction of Gasworks.*

BY HARRY EDWARD JONES, ASSOC. INST. C. E.

CONTINUED FROM PAGE 406.

Discussion.—Continuation of Mr. KIRKLAND'S remarks:

The author had reckoned the leakage at 6 per cent. in the Ratcliff district, on an area of 0·8 square mile, where there was little disturbance of the roads. The area covered by the Imperial Company was 25 square miles, and the greater part of the mains were in new roads, where the ground was continually settling, giving rise to a great deal of leakage, which, notwithstanding, did not amount to more than 10 per cent. No fair comparison could be made between a company like the Ratcliff, supplying a densely populated district, and the Imperial, supplying the outskirts of London, the rental per mile of main in the former being 50 per cent. per mile greater than that of the latter.

He quite agreed with the author as to the importance of keeping the capital account as low as was compatible with the construction of really good works, and with providing for the large yearly increase in the demand for gas. It had been found that the first outlay for properly-constructed works was fully compensated by the lessened yearly outlay for wear and tear. With regard to providing for the increasing yearly demand for gas, it was of course a comparatively easy matter with small companies, like the Commercial and Ratcliff, which could, without much difficulty, be entirely constructed within twelve months; but it was very different with companies like the Chartered and Imperial, where the yearly increase in the demand for gas amounted to about 2,000,000 cubic feet per day, at Christmas, for each company. The retort houses, gasholders, and other apparatus required to make and store this quantity (which would be works two-thirds of the size of the Commercial, and double that of the Ratcliff), could not be completed in one year, so that it was absolutely necessary that the extensions should be commenced two seasons before the gas was actually needed; thus causing the lying dormant of a large amount of capital.

He was of opinion that it was impossible to compare the capital and working expenses without knowing all the circumstances of the respective cases. Some of the companies, in their earlier days, spent large sums out of profits for additions to works, which profits had never been capitalised, so that the real outlay on what should be capital account compared too favorably with that of other companies where capital had been properly debited. Upon the whole, he was persuaded that the policy of the large companies of having thoroughly good and efficient works, with a view to the lowest working expenses, was the correct one; and he was not disposed, after giving due consideration to the paper, to advise the directors of his company to alter their policy in that respect.

Mr. R. H. PATTERSON dissented from Dr. LETHEBY'S recommendation to employ a low temperature in the retorts, with a view to reduce the amount of bisulphide of carbon in the gas. He thought the most important question in gas-making was that of ascertaining and employing the best temperature for carbonizing the coal, so as to obtain from a given quantity the largest possible yield of good gas. This had been the main object of all the inventions of late years, from Dr. EVELEIGH'S down to, or up to, Mr. MALAM'S. It is well known that with a low temperature a large quantity of tar was produced, a portion of which could be converted into gas if a higher temperature were employed in the retorts. Bisulphide of carbon had much to answer for; but if managers were led to adopt any mode of carbonizing which was not the best for producing a large quantity of good gas, it would do great mischief. Gas-making was the principal thing to be attended to—the cost of purification being a bagatelle; indeed, the entire cost would be covered by an additional make of about 100 feet of gas per ton of coal. All the inventions, such as Mr. MALAM'S, claimed to be capable of producing a large additional quantity of gas which would cover ten times the cost of purification. If, therefore, a high temperature was best for this purpose, no question of purification should be allowed to interfere with it. But did a high temperature appreciably affect the amount of bisulphide of carbon? This had not been proved, and he had several reasons for doubting it—especially as $C S_2$ was known to be decomposed at even a comparatively low temperature. There was no necessity to wait for what had long been waited for, a useful, handy pyrometer; for in the large benches of retorts, some were overheated compared with the average, and others relatively cool; the gas could be tested from any of them, and if the experiments were suitably conducted over a sufficient length of time, the question might be solved. As regarded purification, strong 20-ounce liquor had been recommended for removing the bisulphide of carbon. When first he had the honor of being appointed a Gas Referee, the prevailing opinion was that gas should be washed with an almost infinite quantity of gas liquor, in order to remove the sulphur. This had wholly failed. Since then it had been thought that the best mode of taking out bisulphide of carbon was by gas liquor of great strength; and to obtain this it was proposed to have scrubbers of unusual height. These he thought quite unnecessary, because the same strength could be obtained by other means. This plan also failed—and it was bound to fail; for, as he had been the first to point out, the longer gas liquor was kept in contact with gas (by which means alone the ammoniacal strength could be increased), the greater the extent to which the gas liquor was carbonated, and, therefore, rendered incapable of absorbing sulphur in any form. Gas contained from two to three volumes of carbonic acid for every one of sulphuretted hydrogen, and the utmost extent to which gas liquor could be sulphuretted in the ordinary way (and apart from a special process which he had devised) was this, that while two or three volumes would be carbonated, the other quarter, or at most a third, would be sulphuretted. This sulphuretted portion would act; but, being mingled with about three times its volume of carbonate of ammonia, the result was a failure. The longer the liquor was kept in contact with the gas the greater its ammoniacal strength; but the more it was carbonated, and therefore the more inert it was upon bisulphate of carbon.

Mr. VERNON HARCOURT said it was quite true the effect of washing with strong gas liquor was not that which had been sometimes supposed, but there was another advantage in so washing gas. Mr. PATTERSON had done good service in pointing out how important it was in gas purification to remove carbonic acid as completely as possible, and to deal afterwards with the sulphuretted hydrogen. Mr. KIRKHAM said too much had been heard about gas purification in London, and he quite understood the feeling which prompted the remark. But one fact as to gas purification ought to be widely known, namely, that the gas engineers of London had in this respect effected a great improvement. In a considerable portion of the gas supplied to London, the quantity of sulphur was less than half what it was three years ago; and although there was some difference of opinion as to how far the sulphur compounds were injurious, it was generally admitted that the more completely they could be excluded the

*A paper read before the Institution of Civil Engineers of London, January 12, 1875.

better. The chemistry of the matter was pretty well understood. It was known that the action of sulphuretted hydrogen on soda, potash, or lime was to form sulphide of potassium, or sodium, or calcium. It was also known that when one of those substances was for a sufficient length of time in contact with bisulphide of carbon, or other gases through which the bisulphide of carbon was diffused, there took place a combination between the two substances, forming what was termed a sulphur salt. Dr. Letheby had referred to the analogy between that union of sulphide of calcium with bisulphide of carbon, and the more familiar union of lime with carbonic acid. There was also a further analogy. Carbonic acid, which lime would absorb, was driven from the lime again if a stronger acid, such as sulphuric acid or hydrochloric acid, was poured over the carbonate of lime which had been formed. Similarly, when carbonic acid acted upon the compound formed of sulphide of calcium and bisulphide of carbon, it displaced the weaker acid, and carbonate of lime was formed, and the bisulphide of carbon was again set free. There was a small error in the paper where it was stated that the effect of this action of carbonic acid upon the compound thus formed was that the bisulphide of carbon was decomposed, and that the sulphuretted hydrogen passed on. The sulphuretted hydrogen did pass on, but it was by virtue of the decomposition of the sulphide of calcium, and not by virtue of any decomposition of the bisulphide of carbon. The bisulphide of carbon was simply set free from its combination; it was no more decomposed than carbonic acid was decomposed when hydrochloric acid was poured over limestone. When gas containing both sulphuretted hydrogen and carbonic acid passed through a freshly-charged lime-purifier, at first both gases were stopped, and the proportion of calcium sulphide increased until most of the lime had been converted, at least superficially, into either sulphide or carbonate. After this maximum had been attained the proportion of calcium sulphide diminished, until ultimately the whole was decomposed, the sulphuretted hydrogen, arrested for a while, having been expelled, and the lime converted into carbonate. In proportion to the amount of calcium sulphide in the purifier was its power of stopping bisulphide of carbon; this power, therefore, would first increase, then reach a maximum, and then gradually decline to zero. But not only did the purifying power cease, but the bisulphide of carbon arrested by the calcium sulphide was given off again, as the calcium sulphide was changed into calcium carbonate. These facts explained the sudden increase of bisulphide of carbon in the gas passing out of the purifier; for, just after the purifier had been most effective, its action was reversed, and the issuing gas contained not only all the sulphur which it brought with it, but a large additional quantity which the lime had received from a previous portion of gas. It was now found that, by a careful working of lime purification, it was possible to bring down the sulphur in the gas to an average of 10 or 12 grains instead of 30 grains in 100 cubic feet. It was found also that, with great care on the part of the manager, that offensive substance, the foul lime so produced, could be disposed of and prevented from causing annoyance. Still, he did not think that a satisfactory solution of the problem of gas purification had been arrived at. In one respect it was most unsatisfactory. The sulphur yielded by coal was of considerable quantity and value. Under the old system of oxide purification, the sulphur was used: the spent oxide, as it was called, was sent to the vitriol-maker, burned, and the sulphur, amounting to half its bulk, turned into sulphuric acid. Under the present system, the sulphur combined with the lime and was not utilised, while the sulphuretted lime was a waste product, or, if applied to the land, was of much less agricultural value than before. He was at present engaged upon some experiments, of which it would be premature to give an account, in order to obtain, by other means than the imperfect system of lime purification, the same degree of purity, and that consistently with the use of purification by oxide of iron.

Mr. O. C. D. Ross wished to say a few words in favor of gas made from petroleum spirit, not as intended to supersede, but to supplement coal gas, or to be used in small towns, villages, or country houses, where the latter would be too expensive or troublesome. In America, fourteen cities and towns were lighted with this gas exclusively, and in many others it was used in combination with coal gas. Its American advocates asserted that it was not as condensable as coal gas, and that it did not lose in illuminating power to whatever distance it was conveyed; that it was one-third cheaper than gas coal; and that the accumulation of large quantities of coal was much more dangerous than the petroleum when properly stored. Its manufacture involved very little toil, one foreman and four or five laborers being sufficient to manage the manufacture of from 300,000 to 480,000 cubic feet per diem, which was the quantity stated to be now supplied daily by the Citizens' Gaslight Company of Brooklyn. The description of gas which he desired to bring under the notice of the members differed, in some essential respects, from that used in America. It was merely carburetted air, the air being little more than the medium for holding the hydro-carbon vapor and conveying it to the burners, with the advantage of aiding the complete combustion of the gas. The apparatus was simple. The air being drawn through a vessel holding the oil, was, at the option of the manipulator, more or less saturated with vapor, and formed an inflammable mixture, in which the quantity of carbon ought to be about equal in amount to the quantity contained in an equal volume of coal gas.*

Mr. C. Woodall dissented entirely from the author's view with regard to stage retort houses. His figures should be received with caution. The comparative table of the cost of carbonizing embraced items of charge altogether outside the retort house; for the cost of carbonizing rarely exceeded 3d. per 1,000 cubic feet, as against 5d. stated in the paper. He took still greater exception to the plan of comparing the cost of carbonizing, not according to the number of tons of coal, but according to the quantity of gas sold per ton of coal used. This was usually the best method of contrasting the accounts of one company with those of another, but in the present case it was palpably erroneous. It could not be maintained that the placing of retorts upon one level or upon another could have any influence upon the amount of work got out of them, or upon the quantity of gas to be obtained from the coal put into them. Therefore, while from more or less perfection of distribution or manufacture, apart from the retort houses, or the quality of coal used, there was a decided difference in the quantity of gas sold by the various metropolitan companies, it would be seen how that method of calculation was open to considerable exception.

TO BE CONTINUED.

The trial of Kelly and Doyle, who are indicted for murdering John P. Jones, a late mine boss of the Lehigh and Wilkes-Barre Coal Co., has been postponed until the next term of the Court of Oyer and Terminer of Carbon County, Pennsylvania. A change of venue was asked but denied by the Court.

* A fuller exposition of Mr. Ross's views on this subject will be found in a separate communication subsequently presented by him to the Institution.—Sec. Inst. C. E.

On the Sinking of a Pair of Iron Shafts for an Experimental Amber Mine.

By H. Kühn.

(Zeitschrift für das Berg- Hütten- und Salinenwesen, xxii., part 3 & 4, pp. 133-145.)

The supply of amber in commerce is mainly deprived from the district of Samland, near Königsberg, in Eastern Prussia, where it occurs in a deposit locally called "blue earth," in a brown coal formation of the Tertiary age. Until lately amber was got chiefly by dredging and by collecting the fragments thrown up during heavy gales on to the sea-cost, or by shallow, irregular diggings a short distance inland. Recent geological researches having proved the continuity of the amber-bearing beds, the Prussian Government considered it desirable to start an experimental mine, to determine the conditions upon which concessions might be granted to private individuals, the right of working amber being one of the Crown privileges in Prussia.

The locality selected is at Nortyken, in Samland, where the amber-bearing bed has been found by boring to a depth of 140 feet. The section is as follows:—

Hard blue earth, without amber	2 feet.
Blue earth, rich in amber	4·9 feet.
Barren earth, no amber	1 foot.

The level of the bed is 18.7 feet below the level of the Baltic. The overlying strata, 140 feet thick, consist of sands and clays belonging to the brown coal formation. The works planned for laying out the mine consist of two winding shafts, two bore-holes for pumping, and the necessary engines and boilers. As a large quantity of water was to be looked for in sinking, it was decided to bore the shafts and line them with wrought-iron tubes. The depth of both shafts is about 147 feet, and the distance between them is 73·8 feet.

The boring head was a horizontal bar carrying four chisels for cutting into the bottom of the hole, and two at each end radially for describing the outer curve of the shafts. It weighed about 17 cwt. The boring rods of wrought iron were of two sizes; one being an inch square, used in boring percussively; and the other, 2 inches square, used when a twisting strain was applied.

The sand pumps, or shells, for removing the detritus produced in the boring, were of two sizes; the larger being 3·1 feet, and the smaller 2·1 feet in diameter, the length in each case being 6·4 feet. They were wrought-iron cylinders with clack valves at the bottom, but the suspension was so arranged that when brought full to the surface they could be emptied by being tipped like a bucket, without the necessity of being detached from the rods.

The iron tubes lining the shafts are of best boiler plate, 0·8 inch thick, and 4·6 feet internal diameter, in lengths of 4 feet, joined by internal rings of the same thickness and riveted. The tube is further strengthened internally by three longitudinal strips of iron of the same thickness. The bottom length of tube is of double thickness, and terminates in a cutting shoe of triangular section. The total weights of the lining tubes are, 44 tons for shaft No. 1, and 45·6 tons for shaft No. 2, or rather more than 1 ton per lineal yard.

The sinking of the tubes was affected by pressure applied by screws. A cast-iron ring grooved underneath to fit the tube, and having four perforated lugs through which the pressure screws passed, was placed on the top of the tube, and the pressure was applied to the nuts by men working spanners. The lower ends of the screws were attached to a fixed point or abutment formed by a timber platform loaded with cast iron; four screws were placed at equal distances around the circumference of the tube. The spanners were slung by tackles for convenience of manipulation, and from four to five men worked at each, so that from sixteen to twenty men were employed in pressing down the cylinder. The amount of material displaced for each length of tube was about 53 cubic feet, which was removed in four or five fillings of the larger-sized shell in about six working hours. The sinking of the tube occupied about four hours, so that one complete length of the shaft tube was sunk and a fresh length slung and adjusted for riveting in each shift of twelve hours. From the sandy nature of the ground little actual boring was required, the use of the chisels being confined to cutting through beds of shale. The work was done in day and night shifts of twelve hours with an average of twenty-seven men.

No. 1 shaft was completed in 121 shifts, and No. 2 in 106 shifts, including both boring and riveting. The latter operation occupied rather more than half the time.

The total cost of the two shafts was as follows:—

Wrought-iron lining tubes	£4,093
Boring plant	1,259
Carriage	720
Labor for riveting and sinking	715
	£6,787

The water level during the sinking was constant at 32·8 feet below the surface, the shaft being about 46 feet above the botton of the valley. H. B., *in Proceedings of the London Institution of Civil Engineers.*

The Bituminous Coal Mines of Pensylvania.

THEIR CONDITION AND MANAGEMENT.

Messrs. Stiner, O'Neil and Archibald, State Commissioners for the examination of the bituminous veins of Pennsylvania, after the investigation of over one hundred mines, make a report embracing the following facts:

They represent the mines generally to have been, at the time of their examination, in a most deplorable condition, and there is no reason to believe they have shown partiality, prejudice, or exaggeration. They divide the mines into three classes, viz: "Those worked on what may be generally termed no system, block system, and the double heading system.

In the counties of Beaver, Lawrence, Mercer, the Snow Shoe mines in Centre County, Huntingdon, Bedford, Blair and Fayette, the mines are generally worked without system. The drainage is very defective, and traveling ways half-boot up with mud and water, which the mules, as they plunge through it, throw in every direction. The ventilation is of the most indifferent character, utterly inadequate for the purpose, the current of air not being sufficient to move the anemometer in mines working from sixty to a hundred miners, with a large number of mules and drivers; the whole constituting a condition of things than which it would be difficult to conceive one more injurious mentally and physically to the men working in it. Entries or headings are driven onward, and as fast as rooms are cut, sometimes twenty or thirty men are set to work in this narrow space, five feet high by seven feet wide, while the rooms must be driven from ten to thirty yards, and then cut over to the next room before any circulation is provided, and then only by a displacement of the air,

caused by the motion of the cars, which drives it around the pillars. In some instances the air is obtained from the adjoining works, which reaches them more or less loaded with noxious vapors, black damp and other impurities, in which it is difficult to carry a lighted lamp. Frequently the miners are compelled, on account of the foulness of the air, to stop work for some days. The stables located at the bottom of the hoisting shaft throw out an effluvia, penetrating some distance around through the sluggish air current, and producing a sickening sensation to persons descending from the fresh air. "The shaft purporting to be the escapement is used also as a pumping shaft, and at the bottom are placed the engine, furnace and boilers, with an iron chimney like a steamboat stack to carry the smoke out, but all poisonous gases generated in the mine, together with the powder smoke, etc., ascend by the shaft, while the ladders are of the most primitive fashion, and anything but safe. In other cases, the machinery and furnace are located at the top of the shaft, the steam being conveyed down the shaft in pipes and the exhaust steam from the steam pump ascends the shaft, creating a great heat, which, together with the poisonous gases generated in the mines, the powder smoke, and the laborious effort required to ascend the ladders, makes it anything else than a safety escapement. The passage is obstructed with pumps, steam pipes, ladders, landing for ladders, etc., leaving an opening of not more than from ten to twelve square feet, through which to ventilate the whole mine. Main air-courses are driven from three to four feet wide by about one foot eight inches high, which are entirely inadequate, leaving powder smoke standing thick and oppressive through the workings."

The block system, the commissioners say, will do very well after the blocks are cut out and the air current provided, but previous to that, miners labor under peculiar difficulties. "The blocks vary in size from one hundred and fifty to five hundred yards one way, and from one hundred to three hundred yards the other way. Thus the workingman has to cut this long distance, then turn at right angles and cut the other side from one to three hundred yards, before there is any chance for a circulating current. These places are generally worked by two men shut up in this long, narrow burrow, usually about seven by five feet, with a wall of powder smoke behind them, generally so thick that a light at a few feet distance looks like a small spark, which, with the carbonic acid gas thrown off by the men working and the combustion of their lamps, produces a place than which any more injurious to health is hardly to be conceived. This system prevails largely in the counties of Tioga, Westmoreland, Washington, Allegheny and a part of Fayette lying near the Monongahela river; indeed, as far as it can be said of any except no system, this system prevails quite generally throughout the bituminous region."

The double-heading system, an example of which is given at the Morris Run mines, in Tioga County, is highly approved by the commissioners. In this plan, two main headings are driven parallel to each other and a few yards apart, with regulators applied to the several cross headings at the junction with the main incast, thus giving to each cross heading its proportionate share of pure current entering the mine fresh from the outside, and returning it by an overthrow to the outcast. This system has not yet been given general application. It is adopted in a few mines in the counties of Washington, Westmoreland, Fayette and Allegheny, besides the instance already noted in Tioga. LINN, WOOD & Co.'s new mines at Pine Run, Allegheny County, are driven on this system, and when completed by the application of the furnace, will fairly illustrate its value, standing alone in this regard in Allegheny County. The Cliff mines in Washington County are driven on this system, but the advantage of it has been lost by the defective distribution of the air circulation. The Coal Bluff mine, adjoining the above, is likewise worked on this system, and in regard to it the commissioners say: "In point of excellence of condition alike for ventilation and drainage, this mine stands out in bold relief at the head of all the mines visited by the commission."—*Exchange.*

A New Field for Railroads.

CHINA is at last to have a railroad. As strikingly as if it were a drama played on the stage, the first news of this fact reached Europe on the day of the Darlington jubilee, and the first public announcement of it was made in the closing speech at the banquet there given, and on that night the work of rolling the rails for that railroad was begun at Stockton, the other terminus of the orginal railroad. The chairman at this banquet gave all the information that we yet have on this matter, in the following words:—"I have received a very extraordinary letter only this morning. It contains these words, 'It may be interesting to you to know that I have to-day signed a contract for the construction of the first Chinese railway. On Monday night the first rails will be rolled at Stockton; and as China contains one-third of the human race, the field for enterprize and the market for iron are opening to redress the present inaction.'"

These words are significant. China is not only a country of great population, but of immense activity and an enormous traffic. The bulk of the interior traffic is now conducted on its great rivers and a vast system of canals; but it has room for, and, doubtless, could afford a profitable traffic to, a system of railroads exceeding in mileage that of all Europe, to the great advantage of its own population and the rest of the world. Probably enough, this first railroad will be where most of its traffic will come from Europeans, but it may, nevertheless, serve to demonstrate to the jealous Celestials the advantages of this mode of transportation in the interior of their great country. These will be chiefly in the facilitation of internal transportation; for the exports and imports of China, great as they are, are the merest trifle compared with its internal trade. The country is a vast one, and it has the most varied products, whose interchange is now indispensable to the existence of the population, which could be much better fed and clothed if such interchange were facilitated. Progress, doubtless, will be slow in China, but should railroads once get a foothold there, and the prejudice against them begin to be broken down, it is quite probable that the greatest field for railroad construction and the profitable investment of capital, and the best market for railroad supplies and railroad skill, would be in China for many years. Here, doubtless, as elsewhere, and even more than elsewhere, those who begin the work will stand the best chance to continue it; and on this account it behooves American projectors, contractors and manufacturers to watch the opening of this new field. Think of the rolling stock and other supplies needed for the supply of a most industrious nation of three hundred millions! We hope that our national representatives in China, and especially our enterprising and influential merchants there, will give this matter their attention. It may be long before anything can be done, but the field is so great that advantage should be taken of the first opening.—*Railway Gazette.*

The Thomas Iron Co., of Hokendauqua, Pa. have elected the following directors for the coming year, BENJ. G. CLARK, JOHN T. KNIGHT, WM. W. MARSH, DANIEL RUNKLE, CHARLES STEWART, DAVID THOMAS and SAMUEL THOMAS.

The Consolidated Virginia Mine, Nevada.

OUR contemporary, the Georgetown (Col.) *Mining Review*, in its issue of the 18th inst., contains a report of a recent visit to the mine, which will be doubly interesting in view of the conflagration which has so seriously damaged or destroyed the works connected with it.

The Consolidated Virginia is composed of two mines—the Sides, 500 feet, and the White & Murphy, 210 feet, in all 710 feet in length along the lead, the width being as far as it extends each way, the distance not having yet been determined, as the walls of the mine have not been found. The two companies named were organized separately in 1859. They were worked with varying success till about 1872, to the depth of about 500 feet. The stock was on the market at this time, and four men bought the majority of shares, and the mines were consolidated under the above name. The four men who bought the controlling interest, and yet hold it, are JOHN W. MACKAY, JAMES C. FLOOD, JAMES G. FAIR and W. S. O'BRIEN. The firm in Virginia City is known as MACKAY, FAIR & Co., and in San Francisco as FLOOD & O'BRIEN. As soon as the consolidation had been effected, arrangements were made with the trustees of the Gould & Curry mine to run a drift from the 1,200 feet level of their mine into the Consolidated Virginia. The drift was about 1,300 feet long. Here a low grade of ore was found—the vein being eighteen or twenty feet wide—which milled about $18 a ton. A short distance farther, very rich ore was reached, which milled from $400 to as high as $1,200 a ton, and very soon afterward the miners broke through a thin film of clay, and found the bonanza, which is shaped, as far as known, like a pocket or an egg. The bonanzas along the Comstock lode which have already been worked out were found to be of this form. As the walls of the Consolidated Virginia mine have not yet been reached, it is of course impossible to judge of the shape. The ore is, however, known to be in a body, and not in a vein. From the time the body was discovered it gradually widened out on that level—the 1,200-foot—to 96 feet. The ore was followed up to the 1,000-foot level, but never higher. Each level is 100 feet, and after the ore has been taken out and hoisted to the top, its place is supplied with timbers in the form of bulk-heads, which prevent the mine from caving in. On the 1,200-foot level the work was continued down to the 1,300-foot, then 1,400, then 1,500, and finally 1,550—the latter being for air, and also to be on a grade with the other mines.

The stock of the Consolidated Virginia consists of 108,000 shares, par value $100 each. It sells for $340 to $360 a share, and pays more dividends each year than the original par value of the shares. Of these 108,000 shares, MACKAY, FLOOD, FAIR and O'BRIEN own 62,000.

The marvelous richness of the Consolidated Virginia mine can scarcely be realized. There were shipped from it about 2,000 bars of gold and silver, unseparated, or about $7,000,000, previous to the beginning of the present calendar year. The following, which I copied from the books of the company, and verified by bills, receipts, etc., shows the amount of the business since that time: During the month of Jan., 1875, there were shipped $1,100,697; in Feb., $1,200,743; in March, $1,707,571; in April, $1,509,607; in May, $1,521,777, and in June, $1,503,816. From $18,000,000 to $20,000,000 a year, to be taken out of a single mine, is something worthy of remark. In conversation with Mr. CRAWFORD, Superintendent of the Mint at Carson City, who was at the mine at the same time I was, I was informed that a short time ago he had a contract with the Consolidated Virginia to furnish the mint, for coinage purposes, bullion to the amount of $1,500,000. "It was delivered in just twenty-one days," said Mr. CRAWFORD, "and I have reason to believe that it was nearly all produced from the mines during that time. The contract was made in very good time for the company. At the end of every month the mines and mills 'clean up,' that is, they take their machinery to pieces, take up floors, etc., and collect all the gold and silver, that may be in crevices, seams, or adhering to any portion of the mills. When they begin work again it takes some time for the amalgamating pans to fill up and begin to produce." "As for the richness of the mines," continued this old miner and mint operator, "there can be no doubt. Do you suppose these gentlemen (meaning MACKAY, FLOOD and others,) would let everybody go down into the mine, if there was any doubt about it? Besides look about you." It must be confessed that, to all appearances, there was boundless prosperity. We were in the melting and assay building. Bars of gold and silver, worth from $3,000 to 4,000 each, were stacked up by hundreds in the rooms and halls, wagons were being loaded with them, and they were thrown about as if they were so many pigs of iron. In one room, half a dozen men were working over as many furnaces, melting the silver and moulding it into bars—very hot work. In the mine, close by 650 men were employed night and day, with no Sunday play-spell. Engines, hoisting works, machine shops, chutes, railroads, sawmills and buildings large enough for the world's fair, were on every hand, in value reaching into the millions. The machinery in one mill cost a quarter of a million of dollars, and one engine in the Savage mine cost $120,000. In the Consolidated Virginia mine alone 1,000,000 feet of lumber are used every month for bulkheads, and 40,000 cords of wood are burned in one year in the several mills and mines belonging to MACKAY, FAIR & Co. The assay department, spoken of above, is able to melt, bar, assay and stamp $100,000 a day in gold and silver bars in combination—the gold being about forty-five per cent. The weight of the bars is from 90 to 110 pounds.

The Consolidated Virginia mine is reached by a main shaft—probably 25 feet by 10. It has no tunnels running to the surface, because it is situated on level ground. The shaft, as before stated, is now down a distance of 1550 feet. Those not accustomed to judge of distances, had better stop and make a calculation that will give them some idea of this distance. The shaft is divided into three perpendicular apartments about six feet by four. In these the "cages" run. The cages are simply strongly built platforms, somewhat smaller than the apartment or tube in which they descend, and are covered by a bonnet of iron for protection from anything falling from above. These cages—why they are called cages I cannot imagine—are hoisted and lowered by means of immense engines and machinery. This machinery—one machine for each cage—turns a wheel or drum upon which a flat wire rope is wound. As this wheel makes its revolutions, the cage, to which the other end is attached, goes up or down, as desired by the engineer. The machines are so perfect in construction that the weight of a finger regulates their speed, and sends the cage whizzing through the shaft or regulates it to a five minute trip. Each of the three hoisting compartments has three cages, one above the other. On these the ore is brought up and the empty cars are sent down. When the shifts of men take place, each of the three hoisting machines brings up eighteen men, and when it goes down it takes the same number of fresh hands. It requires two minutes to go up or down in these cages, or just four minutes for the round trip. The cages are not like hotel elevators in any sense. In the first place, they are worked by machinery that cost more of itself than ordinary hotels cost; in the next place, they go about ten times as fast as hotel elevators; they have no sides to them, no

places to sit on, and no lights; besides they are damp, and, as you get down, very hot and disagreeable with steam. The precision with which they are worked is very remarkable, and I cannot understand how the shaft was made so exactly perpendicular for 1550 feet that the cages do not strike the sides. Ample provision is made for safety, so that even if the rope breaks, as it did in one of the shafts, a short time ago, the cage stops almost instantly.

The first shaft I went down was the Consolidated Virginia. Adjoining the immense building which covers the shaft and in which the machinery is, there is a building used for offices. In the rear there is a carpeted room in which there is a bath-tub, half a hundred shoes, as many suits of woolen clothes, similar to bathing suits at the seashore, and about the same number of hats—shockingly bad hats. These suits are for visitors to wear in going into the mine. The terrible heat of the mine and its dampness in places prevents the visitor from wearing any article of ordinary clothing. In such a suit as I have described, I stepped on the cage, a light feeling at the head, and a jumping at the heart. Mr. MACKAY, Gen. LA GRANGE, BEN. HOLIDAY, JR., and the foreman of the mine were my companions. The steam was oozing up around us from the caverns below, the cage shook a little as each one stepped on, the bell struck, the hand of the engineer was upon the lever, and down we dropped! Just above our heads a stout iron bar ran across the cage. With one hand I grasped this bar, and in the other I held a lantern. As the cage shot down, like a cannon ball falling from a shot tower, my breath became a thing I was afraid of losing, and I felt a weaknes about the legs which did not speak well for my confidence in them. I must confess my head was very light and the hand that grasped the bar was the only thing strong about me. Before we could bid good-bye to the light of day and the busy world around, we were in darkness black as coal. A sound was heard above like the moving of machinery, and cars filled with ore went rumbling along the iron floor we had left. Steam and heat came up from below, and water dripped upon our heads from above as we shot further and further into the earth. Soon the sound above died out, a moment of silence followed, and then the noise of engines and drills and picks came up to us from the bottom of the mine. A moment later, and we felt that the speed was lessening. The warning mark on the rope had told the engineer that the cage was almost down. A second after a little bump was felt, the cage stopped. and we stepped into the mine, 1550 feet from the surface. Time, two minutes.

There was a commodious station, or chamber, well ventilated and strongly timbered. It reminded me of a railroad station; the cages being cars, the miners the passengers, the ore and timber the freight. To this station the ore is brought in cars, holding 1800 pounds. The cars are pushed on to the cage, the bell is rung, and up goes the precious freight. The air at this station was rather warm, but it was so much better than at other points in the mine that it was a positive pleasure to return to it, after going through some of the drifts. In some places the temperature was 130°. If anybody had told me it was 200°, I do not think I could have disputed or argued the question. I was rather glad when General LA GRANGE, in one of the hottest cross-cuts, said that his delicate health would not admit of his going any farther. Of course we could not leave him, and so we all turned back. At the end of some of the drifts. or cross-cuts, the ore, which the miners were digging out with picks, and blasting when it became necessary, was so hot that a person could not rest his hand upon it. At one place we followed the drift until we came upon the workmen drilling and blasting the ore which stopped the way in front. We had reached the end. A tube of compressed air from the surface opened at the point where these miners were at work, and yet the air was so hot that we could scarcely stay five minutes. The miners only stay a few minutes at a time. Fresh ones come in and take the places of the others. It was at this place that I saw the working of a patent drill. A tube of compressed air furnished the motor for the drill, and it worked like a little engine. One man regulated the supply of air and the machinery of the drill, which is so small that a man may carry it on his back. Another does nothing but pour water into the hole that is being drilled. The rock was not very hard, but it was too hard to work with a pick or hand-drill. The machine went to work and put a hole in the rock as though it had been chalk. It took about four minutes to drill a three-foot hole, and the drill had to be changed once during the time. Half a dozen holes are thus drilled and loaded, and after everybody is out of the cross-cut they are fired off by means of a cap and giant powder. They open each time a fortune of wealth. The miners then go in with picks and shovels and load the cars with the ore. As each drift advances a track is laid for the cars. After all the ore loosened by blasts has been taken out, other blasts are made, and so mining goes on. Lumber takes the place of the ore as fast as the work proceeds.

In going through the mines miles and miles, which I did, I could not help contrasting them, at the present time, with their condition less than three years ago. The stock was then low in price. A bonanza was then unthought of. A two-compartment shaft was down only 400 feet, and Mr. MACKAY informed me that a little donkey engine, scarcely larger than those used for threshing machines, did the whole hoisting of the mine. A board shed was in the place now occupied by an immense building, and the donkey engine has given place to a million dollars worth of machinery. When the Consolidated Virginia Company took the work in hand they continued the shaft and enlarged it; they ran drifts north and south, made up-raises, sunk winzes, dug cross-cuts in every portion of the ore vein, and continued until they found the big bonanza. The present machinery and hoisting works are, as I am informed, sufficient to sink and work the mine to the depth of 4000 feet, including what pumping may be necessary.

My visit to the mine, as stated before, took me to the 1500-foot level. We first went south in the Consolidated Virginia mine 400 feet, then turning, we entered cross-cut No. 4, which we followed 147 feet. Then passing cross-cut No. 3, we entered No. 2, and 324 feet of ore, a wonderful exhibition truly. In every direction we had traversed there was ore and ore. Above our head, under our feet, to our right and to our left, it was a continued and continuous body of ore. We could not escape it. Behind us, in front of us, and on each hand; and when we fell in with Dr. LINDERMAN he was half crazy with excitement. He thought it was time to resume specie payments, and was ready to begin at once. From No. 2 we went to cross-cut No. 1. They are all 100 feet apart, and cross the vein or body of ore at right angles with its course. No. 1 is the boundary between the Consolidated Virginia and the California mines. Nearly all the mines belonging to MACKAY, FLOOD and their partners connect by drifts with the Consolidated Virginia. Three hours were spent in the examination of the two mines named, and although it involved travel which brought excessive fatigue, and although the heat was at times so oppressive that it was difficult to breathe, it was with regret that my face was turned toward the station late in the afternoon. We again took our positions on the cage. The foreman rang the bell which indicated by three strokes that men were coming up and not ore. One stroke of the bell indicates that the best time possible is to be made; two bells tell the engineer that nobody is upon the cage, and three tell him that the freight is of human kind. So the bell struck three—a little jirk, a sudden start, a fading away of the dimly burning lights, a clinging to the iron rod, darkness, silence, and then, after a pause, bursting with the rapidity of lightning into light and life again. The clothes we wore were as wet with perspiration as they could have been with water had we bathed in them. It was better than a Turkish bath and no ill effects resulted from the trip to any of us.

Peat Works in Russia.

By WILLIAM ANDERSON, M. Inst. C. E.

ABOUT eight miles above St. Petersburg, on the left bank of the Neva, are situated the Abouchoff Steel Works, erected within the last dozen years, for the purpose of manufacturing ordnance, railway wheels and axles, and other things of steel. About 3½ miles south of the village of Alexandroffsky, the locality of the steel works, commences a vast extent of bog, formed originally, and, indeed, still forming, about the base of a scrubby birch forest, in which, however, the greater number of trees have long since been cut down. The subsoil is clay of small tenacity, drying to a whitish color. Serious attempts to utilise the peat on a large scale have only been made within the last few years, when the demand for a pure and cheap fuel for the steel works had become pressing. Under the immediate management of Captain FEDEROFFSKY, I. N., the works have been commenced quite on the edge of the bog, where the layer of peat is only 4 feet thick, of which depth 2 feet is compact black peat and the remainder peat of a soft mossy nature. Farther on the bog is said to reach a thickness of 18 feet in alternate layers of compact and mossy turf, the latter always being surcharged with water. The bog, when cut, is of a yellowish color, but soon turns black on exposure to the air. The upper layer of bog is cut into cubes and wheeled away to be spread out and dried. The compact part is obtained in the same way, by spade labor, wheeled in barrows up an inclined plane, and shot on to a stage, from which it is shovelled into two horizontal pug mills, each of which delivers two streams of mashed and mixed peat, about 6 inches by 4 inches in cross section. These are at once shovelled on to low trucks, or trollies without sides, and run along rude railways, composed of flat iron bars, screwed to longitudinal timber sleepers, to the drying-ground, where the mass is formed by hand labor, mostly that of women, in bricks, 13 inches by 8 inches by 4 inches, in wooden moulds. After three days of dry weather the bricks are turned, then tilted up into little heaps, and finally, when dry, after about four to six weeks' exposure, stacked away for delivery in winter. The pug mills are about 18 inches in diameter and 7 feet long, but the following was given as a better size:—Diameter of screw 26 inches, diameter of shaft 8 inches, pitch of screw 8 inches. The screws are not continuous, but each turn is pitched 14 inches from its neighbors. The number of revolutions 12, of blades seven; the length of the barrel 9 feet; the clearance between the screw and the barrel ½ inch. Besides the screws, there are also, secured to the casing, four sickle-shaped knives very strongly made, between which, and almost in close contact, pass similar blades fixed on the screw shaft, their use being to cut up any roots that may happen to get into the mills. The two mills actually in operation were easily driven by a Clayton and Shuttleworth 10-horse portable engine, working under 35 lb. to 60 lb. of steam. The produce of the two machines is said to be 30 cubic fathoms (of 7 feet), equal to 10,290 cubic feet of undried pugged turf in ten hours. The turf made last season into balls, about 3 inches in diameter, weighed 32½ lb. per cubic foot, measured as dried and stacked. The amount of moisture and ash permitted in the turf furnished to the steel works is 25 per cent., of which quantity ash constitutes from 3 per cent. to 5 per cent. In the month of May the turf, as dug, contains 75 per cent. of moisture. It is expected that above 4,800 tons of dry turf will be produced in the present season of one hundred days, and to dry this quantity an area of 70 acres will be required. The price is 8 kopecks a pood, delivered 3½ miles to the steel works, the carriage costing 1½ kopeck per pood,* making the cost 13*s.* 9*d.* per ton; at this price it just competes with wood, the present price of which is 1*s.* per 8·4 cubic feet, as stacked, while Newcastle coal, used in the Siemens-Martin furnaces, at 27*s.* 5*d.* per ton is more expensive than either wood or peat. It is doubtful if turf can be produced at a profit at the price quoted above; much depends upon the weather, although this is generally favorable, the rainfall not exceeding 17·6 inches per annum, and amounting to only 8 inches for the months of May, June, July, and August. Captain FEDEROFFSKY lives in a small cottage built on the edge of the bog, and has about one hundred and fifty workpeople lodged in barracks specially built for them. Although most of the work is done by piecework, he has to feed the laborers, on account of the difficulty of getting supplies to so out-of-the-way a place. He is of opinion that nothing except the rudest and cheapest appliances can be used profitably. The machines were originally constructed to mould the turf bricks, but the cost of subsequent handling was so great that the present rude process was adopted as more economical. Extensive sheds were erected to dry the turf under cover; these have all been abandoned on account of the heavy first cost and labor in carrying and placing the peat on the drying racks. Excavating machinery for getting the turf is quite out of the question, on account of the large quantity of tree roots present in the bog; these roots, however, more than pay for their extraction, because they form an excellent fuel, and are, in fact, exclusively used in firing the portable engine.

It has been found economical to kiln-dry the wood used in the puddling and reheating furnaces. In the Siemens-Martin producers, wood can be used one year after being cut, and the peat with the 25 per cent. of ash and moisture specified. The peat is said to produce excellent gas. The rude tramways are easily shifted about over the drying-ground, and the mashing machinery is also constructed so as to follow the face of the bog as it recedes before the excavators.

In the Proceedings of the Russian Technical Society for May, 1870, M. KEERAYEF, at that time Chief Engineer of the Abouchoff Works, gives the results of experiments on the evaporative powers of coal, damp and dry wood, and turf. The trials were carried out in some two-flue Cornish multitubular boilers made at the Erith Ironworks, and of exactly the same form and dimensions as a boiler in use there. The shells were 20·2 feet long, 6·5 feet in diameter, the two furnace flues 14·56 feet long, 2·5 feet in diameter, each terminating in thirty-seven tubes of 3 inches external diameter and 5·64 feet long. The total effective surface was 696 square feet, calculated to be competent to evaporate 45·4 cubic feet of water at 210° Fahr. per hour; the area of the grate surface being 30 square feet.

Two experiments were made at the Erith Ironworks in 1869 and 1870, with Newcastle and Welsh coal, and in May 1870 at the Abouchoff Works, with superior, small and dirty coal, with damp and dry wood, and, in 1874, with peat

* One kopeck per pood is equal to 1·71*s.* per ton when the exchange is 33¼*d.* to the rouble. 62·03 poods are equal to 1 ton of 2240 lb.

moulded by hand into balls about 4 inches diameter, and air-dried till the moisture contained did not exceed 14 per cent.

Wood dried by artificial means should weigh 160 lb. to the cubic fathom (7 feet), or 16·8 lb. per cubic foot as stacked. The weight of damp wood, after having been cut one year, is 224 lb. per cubic fathom, or 23.6 lb. per cubic foot; the fuel was a mixture of red and white pine in billets, known as nine quarters of an archine (equal to 5 feet 3 inches) of fire-wood.

Mr. KEERAYEF's experiments were made with the view of determining which was the most economical fuel for the steel works, and especially to ascertain the advantage, if any, of kiln-dried wood. The last line but one of the annexed table shows that kiln-dried wood is the cheapest fuel; next comes damp wood, then the best quality of coal, then peat, and lastly inferior coal. The economy derived from using dry wood, as compared with damp, is very striking, amounting to 22 per cent.

TABULATED RESULTS of EXPERIMENTS on the EVAPORATIVE POWERS of VARIOUS KINDS of FUEL.

——	1.	2.	3.	4.	5.	6.	7.
Where experiments were made.	Erith Iron-works.		Abouchoff Cast Steel Works.				
Date of experiments	Dec. 20, 1869.	Mar. 25, 1870.	May 7, 1870.	May 23, 1870.	May 25, 1870.	May 26, 1870.	1874.
Kind of fuel used.	Good Newcastle coal.	Good Welsh coal.	Superior coal.	Inferior coal.	Wood cut one year; still damp.	Wood dried artificially.	Peat.
Fuel consumed per hour.	335 lb.	351 lb.	450 lb.	515 lb.	796 lb.	538 lb.	..
Cubic feet of water evaporated per hour at 100·4° Fahr.	48	50	49·5	51	38·6	40·4	...
Pounds of water at 212° Fahr. evaporated per 1 lb. of fuel.	9·79	10·09	7·57	6·76	3·25	5·0	4·26
Cost of evaporating 1 cubic foot of water, in kopecks.	3.	2·9	3·87	4·37	2 7	2·1	3·2
Ditto in pence.	0·960	0·928	1·238	1·398	0·864	0·672	1·024
Duration of experiment.	h. m. 5 25	h. m. 10 30	h. 4	h. m. 3 32	h. m. 3 48	h. m. 4 45	...

—*Proceedings of the London Institution of Civil Engineers.*

The Petroleum Region of the Province of Kouban (Circassia.)

BY COLONEL ROMANOWSKY.

(Journal of Mines, St. Petersburg, April 1873, pp. 1-25.)

THE author of this report, which is addressed to the Russian Minister of Finance, states that, although petroleum is met with in many other parts of Russia, hitherto it has only been regularly worked in the province of Baku, on the shores of the Caspian Sea, and in the province of Kouban, which borders on the Black Sea. Baku lies at the south-eastern, and Kouban at the north-western, extremity of the Caucasus. The petroleum found in the former province is near the surface, and is of a thick and heavy quality, best adapted for lubricating oil; that in the latter province occurs at a greater depth, is of a lighter quality, and more appropriate for making refined or burning oil.

The author commenced his study of the Kouban petroleum region in the summer of 1868, and carefully examined the country south-west of the city of Ekaterinodar, between the towns of Noworossinsk and Taman, and the Cossack villages of Ilok and Shapsug, together with the whole of the peninsula of Taman, opposite to Kertch, on the Crimean coast. This district is generally composed of low hills, with strata of clay, marl, lime and sandstone belonging to the Tertiary formation. Farther to the South it is bounded by more elevated heights, forming the northwestern slopes of the Caucasian mountains. Everywhere he found abundant signs of petroleum, in some places indicated on the surface by oil springs, and in others by gas issuing from the ground. These indications, which resemble those observed in the oil regions of Pennsylvania, occur frequently in the valleys and on the banks of mountain streams, tributaries of the Kouban river, and particularly on those of the small rivers Koudako, Psiff, Nipstil, Hops, and Psebes. These rivers traverse a territory of about 100 square miles in extent, which was given by the Emperor of Russia to his four generals, EWDOKIMOFF, KESSLER, KARTZEFF, and SOUMARAKOW-ELSTON. There are, however, within the province of Kouban more than 600 square miles of territory where similar indications have been met.

On the banks of the river Koudako, at one of the points where such an issue of gas had been observed on the property of General EWDOKIMOFF, Colonel NOWOSILTZOFF, after long searching for petroleum elsewhere determined, in 1867, to bore a well on the American system. In November 1867, when he had penetrated to the depth of 270 feet, an immense volume of petroleum was thrown up with great force at the rate of about 545 barrels (21,800 gallons) every twenty-four hours. Part of the dry bed of the river Koudako, having a capacity of 100,000 cubic feet, was made use of as a reservoir to hold this large quantity of oil, and was twice filled; but both times, a freshet having occured, the waters washed away the dams, and the petroleum was lost. The reservoir was then strengthened, and continued to serve successfully for several years. Shortly afterwards three more wells were sunk close by, and a similar flow of oil was obtained from them; but, as has always happened in America, the quantity gradually decreased, and finally ceased altogether. By the year 1870, however, the four wells had produced 273,000 barrels, or say 11,000,000 gallons, of petroleum. Two more wells had been meanwhile bored to a depth of ut 440 feet, and these, at the time when the author saw them, in 1870, were each yielding oil at the rate of about 90 barrels, or 3,600 gallons, per diem, whilst other wells were in progress to keep up the supply.

According to the description, the oil is at first thrown out from the well (a hole varying between 3 inches and 6 inches diameter) in very large quantities with extraordinary force, sometimes to the height of 50 feet above the ground, accompanied by a great deal of gas; but the latter occurs at irregular intervals. The scaffolding, or derrick, above the well is 56 feet in height, and a portable steam-engine of 10 HP. is used for driving the drilling machinery.

The author estimates that, by sinking five wells per annum at this spot, as much as 6,500,000 gallons of petroleum could be annually raised, and he states that, in the opinion of the Russian engineers in the Caucasus, there are at least two hundred and fifty localities in the province of Kouban where petroleum would be found in similar abundance; but reckoning only one hundred, he estimates that the province is capable of yielding 650,000,000 gallons of crude oil per annum.

A carefully-drawn plan shows the position of the wells, the shops, and the tanks, most of which were full at the time when the report was written. The works where the crude petroleum is refined were unfortunately established by Colonel NOWOSILTZOFF two or three years before he so successfully sunk wells on the banks of the Koudako. At the time they were constructed he was seeking for petroleum on the low grounds on the seashore near Taman, a small port at the mouth of the Kouban river, and he therefore built the refinery close to Taman, which is 60 miles from the wells on the Koudako. The carriage of the crude petroleum over bad roads to these works is the chief difficulty with which the owner has to contend; but it is now conveyed part of the distance in iron barges down the river Kouban, a flat-bottomed tug steamer having been placed for the purpose on that river. By this means the cost of carriage has been reduced by one-half. The petroleum might, however, be conveyed by an alternative route to the port of Anapa, a distance of only 30 miles.

The author states that he has seen many petroleum refineries in America and in Europe, and is certain that, as regards the extent of the buildings and the machinery, Colonel NOWOSILTZOFF's works are equal to any; but, on the other hand, the apparatus for heating and distilling the oil is not invariably of the best description, and he instances the fact that the fuel used is anthracite, instead of which he recommends that the oil itself should be applied as fuel.

The report concludes with a repetition of the strong conviction that petroleum will prove to be fully as abundant in the province of Kouban as it is in the most prolific regions of Pennsylvania. The author deplores the apathy with which so important a subject is regarded by his countrymen, and states that not one single Russian merchant has ever paid any attention to the Kouban petroleum. This, he says, makes the energy and perseverance which have been displayed by Colonel NOWOSILTZOFF all the more commendable, for it was only after three years of unsuccessful exploration, and a great outlay of money, that Colonel NOWOSILTZOFF's efforts were at length rewarded by the abundant flow of petroleum from the wells on the Koudako.

An elaborate balance sheet, showing the lucrative results obtainable from petroleum wells and oil refineries, terminates the paper. O. C. D. R., *in Proceedings of the London Institution of Civil Engineers.*

Zinc as an Anti-Incrustator.

AMONG the various means used of late for preventing scale in boilers is zinc introduced into the water space in ingots from one to two inches in diameter and about 14 inches in length. We have made frequent use of it and in many instances it has worked well, though we think its effects are different in different waters. An ingot of zinc of the size indicated above will disappear in from three to four months. We have made trial in nearly all the New England States and in some of the Western States, and we believe that in most cases it has shown good results. From what we have seen we are inclined to the belief that the iron of the boiler and the zinc form a voltaic couple, and that the water is sufficiently acid to excite galvanic action. The zinc is consumed, leaving an oxide well known to those who are familiar with the *Sulphate of Copper Battery*, while the iron acts the part of an electrical conductor. The scale is rendered soft, porous, and friable, and is easily removed from the boiler. We would not be understood as saying that this is true in all cases. We are of the opinion that the quality of the water has much to do with the success of this method. Mr. J. F. DONOGHUE, of Springfield, Mass., has devised and patented an anti-incrustator made by casting an ingot of zinc around a coil of copper wire. The ingot is flat on one side, and the coil is, consequently, only about two-thirds imbedded, leaving one-third to be acted upon by the water. Whether the introduction of a third metal, viz. copper, is an advantage, we are unable to say. But so far as we know, Mr. DONOGHUE's invention has worked well in most instances. We shall watch this method of treating scale, and report from time to time what our experience is —*The Locomotive.*

Eastern Pennsylvania Puddlers —There is an uneasy feeling among the puddlers of Philadelphia and vicinity, and a feeling of great dissatisfaction among their employers. The puddlers have been locked out of a number of the Philadelphia mills since last summer, and they have thus far failed to indicate a willingness to accept lower wages. Nearly all of these mills have continued to run, getting their supplies of puddled iron elsewhere. At another mill the men have yielded. On the 11th inst., the mill of Messrs. STEPHEN ROBBINS & SON, all departments of which had been idle for about two years, was again started, the puddlers going in at $4.50 per ton and no allowance from the office to the helpers. This is the first decided breach of the Philadelphia scale, which has been $5.25 per ton to the puddlers and 50 cents per ton additional allowance from the office to the helpers, making $5.75 per ton. Lock-outs have taken place at the mills of JAMES ROWLAND & Co., A. & P. ROBERTS & Co., Philadelphia Iron and Steel Co., and HUGHES & PATTERSON, and their men will not be permitted to go to work until they are willing to accept the same wages paid the puddlers of the Messrs. ROBBINS. The other Philadelphia mills having puddling furnaces are those of Messrs. MARSHALL BROTHERS & Co., GAULBERT, MORGAN & CASKEY, and EDWARD S. BUCKLEY. The first two continue to pay the old rate for puddling, but the last has never paid so much as the other mills and therefore urges no decline. The Tioga Rolling Mill has no puddling furnaces.

Along the Lehigh, puddlers' wages vary from $4.50 to $5 per ton. There is a lock-out now prevailing at Catasauqua. The puddlers of the Catasauqua Manufacturing Company threatened to strike if the Company sent puddled iron to other mills where puddlers were on strike, and Manager OLIVER WILLIAMS at once stopped work and closed up the mill. The men have since requested work, but have been refused. The mill will be closed for an indefinite period.

Along the Schuylkill, puddlers are receiving from $3.75 to $4.50 per ton. Along the Susquehanna they receive from $3.50 to $4. In all the cases above specified the wages paid are for boiling, except in the Susquehanna region, where the price per ton is for puddling.—*Bulletin.*

SELECTED LIST OF PATENTS.

FOR THE WEEK ENDING OCT. 23, 1875.

RELATING TO MINING, METALLURGY, GAS MAKING, ENGINEERING, &c. REPORTED FOR THE "ENGINEERING AND MINING JOURNAL" BY LOUIS BAGGER & CO., SOLICITORS OF PATENTS, WASHINGTON, D. C.

168,454. Earth Augurs, Wm. E. Coman, Oak Park, Ill.—The loose point forms a valve to admit air, which is operated by a rod passing up through the shank. The claim is for a combination of a hollow shank, loose point, adjusting rod, and spring.

168,450. Machines for Bending Bars of Metal, A. H. Campbell, Philadelphia, Pa.—The rolls are each formed of three separate discs, clamped together on the end of the shaft projecting outside the housings by a nut, the upper one being adjusted vertically, and the system of gearing is such as to communicate a slow movement to the rolls, from a rapidly moving driving pinion.

168,409. Diking Attachments for Dredgers, G. W. Parsons, Salisbury, Md.—This is a diking attachment, consisting of an adjustable chute, supported on cross-pieces, having pivot-pins and rounded ends with screw bolts passing through guide standards, to allow the chute to oscillate on the settling of the lighter upon which it is supported. The hopper is provided with a main water pipe and branch pipes for discharging jets of water through the perforations in the bottom, to facilitate the movement of the dredged mass.

168,416. Ore Separators, C. W. Reily, Cincinnati, Ohio.—Ore is fed into a receptacle, through which flows an upward current of water. In the bottom of the receptacle is placed a movable screen provided with handles. When the charge of ore is sufficiently washed, it is removed by lifting the screen with its superincumbent load.

168,440. Furnaces for Smelting Lead, J. V. Woodhouse, Bunker Hill, Ill.—There is a semicircular hollow wall, to allow air to pass and cool it. The blast passes from the blast-box encircling the wall through tuyeres, the latter directly into the charge without previous heating.

168,439. Steam Hammers, S. D. Wilson, Des Moines, Iowa.—The throw of the valve is adjusted by a wedge, which is connected by rods through the hollow trunnion with the treadle.

168,548. Methods of Using Carbonic Acid Gas as a Motive Power, J. Westcott, Tocoi, Florida.—This is a method of utilizing carbonic acid and other gases as a motive power, by storing the same up by condensation through the surface attraction of charcoal or other equivalent absorbent placed in a receiver, and afterward eliminating and developing the said gas by heat or electricity, when desired.

168,504. Rolling Mills, N. King, Etna, Pa.—As an improvement in rolling mills, this consists of the combination of two or more rolls, one or more of which is capable of endwise movements, and each presenting two or more plain cylindrical working surfaces of different diameters, terminated by bevelled collars, that alternate those of one roll with those of the next adjacent roll.

Notes.

Oil Tank Car.—Mr. A. P. ODELL, of Oil City, Pa., has invented and patented an oil tank car in which the tank is suspended below the platform, instead of resting upon it. The idea is that the car can be used to carry other freight on the return trip, when the tank is empty.

Rescuing Colliers after Explosions.—The invention of MR. HENRI FAYOL, of Commentry, Allier, France, relates to apparatus for supporting respiration and light in suffocating atmospheres, consisting, firstly, of parts which the workman carries with him, such as a respirator connected by a tube to a portable air reservoir, a clip for closing the nose, glasses for protecting the eyes, and a lamp for lighting dark localities. The mouth-piece has branch tubes provided with inlet and outlet valves. The lamp is supplied with air by a tube connected to the portable air reservoir; this is formed as a bellows, and has a branch pipe by which it may be filled with fresh air from time to time. The apparatus consists further of a pump for a continuous air supply, connected to an air conduit pipe for supplying the before-mentioned portable reservoir, and also a distributing reservoir, having branch pipes to which the respirators and lamps of workmen are connected that are not provided with a portable air reservoir.

A Paragraph appeared in a Baltimore paper, some time ago, stating that a Mining and Manufacturing Bureau for the C. & O. R. R., had been established at Richmond, giving the names of the officers &c. We stated as soon as we saw it, that there was more imagination than reality about it. We have since had a conversation with the gentleman who is named as the head of the Bureau, and he assures us that no such measure had been adopted. There was some conversation among parties interested as to the propriety of such a move, but no steps have yet been taken to establish such a Bureau, and it is a source of annoyance to the gentlemen mentioned, that their names should be connected with an erroneous statement.—Huntington, (W. Va.) *Advertiser*.

Schuylkill Miners Wages for October.—The parties drawn October 1st, for furnishing prices of coal, on which to base wages to be paid in October, 1875, make the following returns.

Preston No. 2 colliery, (P. & R. C. & I. Co.)	$2 55
Eagle Hill Shaft, (P. & R. C. & I. Co.)	2 60
Buckville Colliery, " "	2 56
Anchor " "	2 84
ATKINS & BROS., Furnace Colliery,	2 28

The average of these prices is $2 56 7-10, and the rate of wages will be two (2) per cent advance on the 2 50 basis.

Celluloid.—There was an explosion of a Celluloid factory at Newark, N. Y., accompanied by serious loss of life, September 8. "Celluloid" is a newly-discovered substance manufactured from several ingredients, chief among them gun-cotton and camphor. It possesses a high value on account of its close resemblance to coral, tortoise-shell, amber, or malachite, according to preference. Not only is it susceptible of the richest and most delicate coloring, but it is very light and at the same time tough. It is largely used in the manufacture of jewelry and fancy goods.

From the great facility with which it ignites and burns—for it contains within itself the elements necessary to sustain combustion without the access of air—it must be considered a very dangerous substance; articles made of it readily ignite from the flame of a match and are very difficult to extinguish.

Large Furnace Production.—About a year ago, Isabella Furnace No. 1, at Etna Penna., received much attention throughout the country for its remarkably large yield of pig iron. The Isabella Furnace Company own two stacks, and since last April, No. 1 has been blown out and No. 2 put in blast. It has been gradually improving since it was started, and the week ending Oct. 16th it surpassed the largest reported yield of the famous No. 1. The largest yield of No. 1 was the week ending Nov. 7, 1874, when 702 1220-2240 tons of pig iron were made, while the largest yield of No. 2 was the week ending 16th inst., when 714 1240-2240 tons were turned out. Of this 112½ tons were made in one day. One-third of the iron was No. 1, and the remainder No. 2. This beats all other furnaces ever reported. It should be mentioned, however, that No. 2 has a 20-foot bosh while No. 1 is but 18 feet in diameter at the bosh. Each stack is 75 feet high.—*Bulletin*.

Lake Superior Copper Shipments.—The *Northwestern Mining Journal*, of October 20, says: The following shows the gross shipments of copper from Portage Lake since the opening of navigation:

REFINED COPPER.	Tons.	lb.
Calumet and Hecla	9299	58
Osceola	397	174
Atlantic	148	1667
Allouez	174	153
Franklin	248	479
Pewabic	104	722
Isle Royale	34	1006
Central	23	1058
R. Uren	6	—
Houghton	15	348
S. & D. T. Co	2	223
Houghton Tribute Co	5	438
Total	10583	329
MINERAL.		
Quincy	1560	1063
Atlantic	598	259
Quincy Tribute Co	6	1285

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines.

Comparative Statement for the week ending Oct. 23.

	1875.		1874.	
	Week.	Year.*	Week.	Year.
Wyoming Region.				
D. and H. Canal Co	64,969	2,463,832	55,239	1,933,357
D. L. and W. RR. Co	69,111	2,740,061	57,759	2,012,237
Penn. Coal Co	30,635	1,113,863	26,485	1,081,310
L. V. RR. Co	16,387	755,221	16,100	776,007
P. and N. Y. RR. Co	827	81,804	1,785	51,060
C. RR. of N. J	46,628	1,039,647	47,702	1,195,055
Penn. Canal	13,752	238,688	8,996	278,504
Lack. and B. RR.	..	81,493	..	112 529
	242,309	8,565,209	214,066	7,441,059
Lehigh Region.				
L. V. RR. Co	91,142	1,562,370	78.132	2,596,467
C. RR. of N. J.	37,959	538,619	31,780	948,918
D. H. and W. B. RR.	2,117	65,697	1,604	33.373
	131,218	2,166,686	111,516	3.578,758
Schuylkill Region.				
P. and R. R. RR. Co	177,932	3,615,533	177,914	4,233,400
Shamokin & Lykens Val.	27,876	994.590	27,475	774,263
	205,808	4,610,123	205,389	5,007,663
Sullivan Region.				
Sul. and Erie RR. Co	647	7,139	494	30,024
Total	579,982	15,349,157	531,465	16,057,504
Increase	48,517	..	..	..
Decrease	.	708,349	..	..

* Year beginning January 1st.

The above table does not include the amount of coal consumed and sold at the mines, which is about seven per cent. of the whole production.

The following Table does not give the entire production of our Bituminous mines, but it is by far the fullest report published.

The Production of Bituminous Coal for the week ending Oct. 23, was as follows:

Tons of 2,000 lb., except where otherwise designated.

Cumberland Region, Md.	Week. Tons.	Year. Tons.
Tons of 2,240 lb	50,343	1,915,874
Barclay Region, Pa.		
Barclay RR., tons of 2240 lb	8,575	268,411
Broad Top Region, Pa.		
Huntingdon and Broad Top RR.	5,014	174,345
*East Broad Top	942	36,738
Clearfield Region, Pa.		
*Snow Shoe	772	50,627
*Tyrone and Clearfield	21,379	694,096
Allegheny Region, Pa.		
*Pennsylvania RR.	3,869	175,866
Pittsburgh Region, Pa.		
*West Penn. RR.	4,547	173,094
*Southwest Penn. RR.	821	17,303
*Penn. & Westmoreland gas coal, Pa. RR.	14,099	550,809
*Pennsylvania RR.	10,094	342,879
Kanawha Region, W. Va.		
Chesapeake and Ohio RR.	4,882	145,458

* To Oct. 14.

The Production of Coke for the week ending Oct. 14.

Tons of 2000 lb.	Week. Tons.	Year. Tons.
Tyrone and Clearfield	12	285
Alleghany Region	..	53
West Penn. RR.	705	39,770
Southwest Penn. RR.	14,746	430,874
Penn. & Westmoreland Region, Penn. RR.	924	28,097
Pittsburgh, Penn. RR.	2,352	84,174
Total	18,739	583,253

The receipts at Port Richmond for the week were 70,000 tons, shipments 65,000 tons, and balance on hand 180,000 tons.

The decrease of shipments of Cumberland Coal over the Cumberland Branch, and Cumberland and Pennsylvania Railroads amounts to 62,493 tons.

The Exports of Coal from Baltimore for the week were 0000 tons, and for the year, 32,772 tons as compared with 62,996 tons to the corresponding time in 1874.

Receipts of Coal at Boston, for week ending Oct. 22, and years from September 1st, 1874 and 1875.

From	Week. Tons.	1875. Tons.	1874. Tons.
Alexandria and Georgetown	3,125	22,897	33,356
Philadelphia	19,519	139.340	122,351
Baltimore	4,010	28,180	38,076
Other places	7.971	62,591	56,518
Great Britain	—	704	1,270
Nova Scotia	—	8,647	10 421

Shipments from Pictou, N. S., for the week ending Oct. 16:

	Tons. Week.	Year.
To United States	170	21,304
" West Indies	—	1,897
" South America	100	4,772
" Canada	3,677	127,132
" Other Provinces	4,866	55.569
	8,813	210,674

Belvidere Delaware RR. report:	Week.	Year 1875.	Year 1874.
Receipts of coal at Coal Port (Trenton)	8,535	140,769	233,218
" " " South Amboy	6,288	196,413	510,475
Shipments of Coal Port (Trenton)	9,119	137,237	233,228
" South Amboy	13,219	207,999	521,437

Shipments from Block House, Cow Bay, C. B., to the following destinations, from Oct. 1 to Oct. 9, 1875:

	Week.	Year.
Provinces	258	6,730
West Indies	480	1,286
United States	542	9,293
	1,280	17,309

COAL TRADE REVIEW.

Duties.

Anthracite free, *Bituminous*, per ton of 28 bushels, 80 lb. to the bushel, 75c., gold.

All *slack*, or *culm*, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c. gold.

Not otherwise provided for, per ton, 40c. gold.

NEW YORK, Friday Evening, Oct. 29, 1875.

Anthracite.

Upon the whole, there is less business doing than a week ago, which is unusual for the latter part of a month; for previously, this year, when prices were advanced regularly each month, the greater part of the business was transacted during the last ten days of the several months. The action of the Combination in fixing prices that will not be advanced during the winter has resulted in bringing the demand down to the actual requirements of buyers in many localities, although there are others who, in anticipation of the nearness of the closing of navigation, will be compelled to lay in the balance of their winter stock very soon. With this guarantee of no advance in prices, buyers who can secure their stocks during the winter, whenever they desire, are inclined to hold off as long as possible, with the hopes of securing concessions from a certain class of brokers or contractors who always have bargains to offer during the quiet winter months.

We do not anticipate that the Combination will make a reduction in prices, nor would we intimate that any of its members will adopt some irregular mode of making concessions to buyers; but, unless the demand should be better than it is believed it will be, we anticipate seeing considerable underselling on such sizes as may be in

light demand. We already hear of concessions of as much as 25c. per ton on egg and other large sizes. One or two of the large companies are reported to be doing a little in this way, yet we are unable to confirm the report, and the blame must be thrown on smaller, or what are known as "outside," companies. Let the coal come from whom it may, or how it may, we anticipate seeing a fair quantity of it on the market before Spring, and do not doubt that if shrewd, discreet buyers should enter the market now, they might secure fair concessions—always bearing in mind that when they are being favored they must keep the matter secret, or somebody would have to "explain," which might result in a return to full circular rates. There is no doubt that, if certain buyers had been more discreet during the year, and had not attempted, after they had received concessions from one company, to use them as a lever to secure greater ones from some other company, they might have saved considerable upon their purchases of the whole year. Even those who might be inclined to make concessions will not knowingly sell to this class of buyers. The companies who have, during the past season, been offering inducements to buyers, whether innocently or otherwise, appear to have only discovered the fact upon complaints being made by competing companies who could not have made the complaint, had the buyer not given the information.

The Production of anthracite coal for the week ending October 23, was 579,982 tons, and from January 1, 15,349,157 tons. The production for the corresponding week of 1874 was 531,465 tons, and from January 1, 1874, 16,057,504 tons. The production for the week ending October 16, 1875, was 546,639 tons. From the above figures it will be seen that there was an increase in the production of last week, as compared with the previous week, of 33,343 tons, and of 48,517 tons, as compared with the corresponding week of 1874. There has been a decrease since January 1, as compared with the corresponding period of 1874, of 708,349 tons.

Bituminous.

Cumberland coal is very quiet and the out-put less than a year ago. The total decrease on the year's production is now 62,493 tons or about 2,000 tons greater than a week ago. Of this decrease over 30,000 tons appear in foreign exports from Baltimore, which, since January 1st, have only been about one-half as large as for the corresponding period of 1874. The demand for Central Pennsylvania coals has fallen of considerably, although the out-put is fairly maintained on orders secured some time ago. The prices of these coals are very irregular, and in some cases quite unremunerative. The Cumberland (Md.) *Daily News* announces the arrival in that city of Col. THOMAS SCOTT and the board of directors of the Pennsylvania Railroad, who intended to make the tour of the coal region. In view of the fact that the shipments of Cumberland coal via State Line have been more than doubled since January 1st, as compared with the corresponding period of last year, some believe that this visit portends that an effort will be made to secure even a greater portion of the trade, and they look for such concessions in freights as will enable shipments in large quantities to be made from Greenwich and South Amboy.

Foreign and Gas Coals remain very quiet with no changes to note.

Freights.

From this port there is but little change to note, rates ranging from $1 30@1 40 to Boston, with vessels only in moderate supply. From Philadelphia, Georgetown and Baltimore, rates are higher and vessels scarce. At Georgetown, as high as $2 10 to Boston is being offered, compared with $1 80 a week ago. A year ago the rate was about $1 60, while during the latter part of November it was but $1 75.

Philadelphia Coal Trade.

PHILADELPHIA, Oct. 28, 1875.

THE retail trade cannot be said to be as lively as it was a short time ago, owing mostly to the warm weather we have had lately. Orders for shipment are also slacking, and vessels, particularly those of light draft, are unusually scarce.

There is no change in the rates of freight which ruled for some weeks past, either East or South. The companies having wisely agreed to let prices for November remain the same as for October, there is a want of that stir noticeable at the end of each month, when buyers are eager to save the monthly advance, and which is followed by dullness at the beginning of the following month. The shipments through November will be more uniformally scattered during the month, but it is not expected that the demand will be sufficient to absorb the production, unless it is considerably curtailed, and at the end of November the storing places will no doubt be literally gorged with coal, being already well filled up. There is assurance given of no change in prices until March 1st of next year, but this does not apply to the company's yards, and the certainty promulgated to the dealers that they will have to pay the present rates until then, coupled with the fear of the retail rates going down, makes them feel excessively cautious in their purchases.

Wholesale Prices of Anthracite Coal for Nov. f.o.b. at the Tide Water Shipping Ports per ton of 2240 lb.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
*Lackawanna and Scranton at Rondout and Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
‡Pittston at Newburgh	5 05	5 05	5 15	5 40	5 90	4 85
Wilkesbarre at Port Johnston	5 05	5 15	5 25	5 65	6 10	4 95
Plymouth, R. A., *Net*	....	....	5 25	5 65	6 10	4 95
Susque. Coal Co. at Amboy W.A.	5 05	5 15	5 25	5 65	6 10	4 95
Kingston at Hoboken	5 05	5 15	5 25	5 65	6 10	4 95
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 55	5 65	6 10	5 10
Old Company's Room Run "	5 55	....	5 55	5 65	6 10	5 10
§Sugar Loaf, Hobok. &Amb."	5 55	....	5 55	5 65	6 10	5 10
Lehigh Coal Exchange "	5 55	....	5 55	5 65	6 10	5 10
Honey Brook Lehigh	5 35	....	5 55	5 65	6 10	5 10
Spring Mt. C. Co. at Hoboken	....	....	....	....	....	....
Beaver Meadow at South Amboy	5 55	....	5 55	5 65	6 10	5 10
†**Schuylkill Coals at Port Richmond.**						
Schuylkill white ash	4 55	4 65	4 75	5 15	5 60	4 45
Schuylkill red ash	....	....	5 05	5 25	5 65	4 45
Shamokin white and red ash	....	....	....	5 40	5 80	4 50
Lorberry	....	....	5 90	5 90	5 90	4 65
Lykens Valley	....	....	6 50	6 50	6 50	5 50

	Per ton.
Freight from Hoboken and Weehawken to New York	40c.
" " Elizabethport & Port Johnston to N. York.	45c.
" " South Amboy to New York	50c.

*Freight on Lackawanna coal from Rondout to New York, by boats or barges of the D. and H. Canal Co. 50c. per ton, the expense of towing vessels from New York harbor to Rondout and back will be borne by the Company.

†Freight from Port Richmond to New York (free of discharging) 85c. per ton.

‡ Prices to the Trade.

§ By Canal at New York, Jersey City and Brooklyn, 30c additional alongside.

Schuylkill coal is delivered f.o.b. of boats in New York harbor at 50c. per ton additional to these rates.

Pittston coal is delivered to carts in New York or Brooklyn at 65 cents per ton in addition to the above rates.

Wholesale Prices of Bituminous Coal.

Domestic Gas Coals.

Per ton of 2240 lb.	At the Shipping Ports.	Alongside in New York.
Westmoreland and Penn. at Greenwich, Philadelphia	$5 20	$6 50
" " at S. Amboy	6 00	6 50
Red Bank Cannel Pa. at Philadelphia	8 00	8 50
" " South Amboy	8 50	..
" Orrel	6 00	6 50
Youghiogheny, Waverly Co., at Balt	5 00	6 50
Despard, West Va.	5 00	6 50
Murphy Run, West Va., at Baltimore	4 75	6 50
Fairmount, West Va., " "	4 75	6 50
Newburgh Orrel, Md. " "	4 75	6 50
Cannelton Cannel, W. Va., at Richmond.	9 50	11 00
" Splint, " "	5 00	6 50
Peytona Cannel, " "	9 50	11 50
Straitsville " at Sandusky, O	3 25	10 00

Foreign Gas Coals.

	Sterling.	Am. cur'cy,
Newcastle, at Newcastle-on-Tyne	10/6@12/9	6 50@ 7 00
Liverpool House Orrel, at Liverpool	26/	13 00
Ince Hall Cannel "	47/	18 00@20 00
" Gas Cannel "	32/ 6d	13@14
Scotch Gas Cannel, at Glasgow, nominal,	25/	7 50
	Gold.	
Block House, at Cow Bay, N. S	2 00	5 50
Caledonia, at Port Caledonia	1 75	5 25
Glace Bay, at Glace Bay	1 80	5 50
Lingan, at Lingan Bay	75	....
Sydney, International and Reserve mines, at Sydney	2 00	5 50
Pictou, Albion & Vale mines, at Pictou.	2 25	5 75

Steam and House Coals.

Broad Top, at the mine, $1 25; at Amboy	4 75@5 00	5 25@5 50
Cumberland, at Georgetown and Alexandria, Va	4 00@4 25	5 25@5 50
Cumberland, at Baltimore	4 25@4 35	5 75@6 00
Clearfield and Allegheny, "Derby," "Kittanning," "Sterling," "Sonman," and "Eureka," at the mines, $1 00; at Greenwich, Phil.	4 65	5 65

Retail Prices in New York.

Anthracite.

Per 2000 lb.	Grate and Egg.	Stove.	Chestnut.
Pittston coal, in yard	$6 20	$6 40	$5 60
Lackawanna coal, delivered	6 75	7 00	6 25
Wilkes-Barre, "	7 00	7 25	6 75
Lehigh & Locust Mountain, del'd	7 00	7 50	6 50
Schuylkill Red Ash, del'd	7 00	7 50	

The Cost of delivering Pittston coal ranges from 40 cts. to $1 per ton, according to distance from the yard.

Williamsburgh, N. Y.

Lackawanna Coal at Yard.

Stove	$6 40
Egg	5 90
Chestnut	5 40

Bituminous.

Liverpool House Orrel, delivered, per ton of 2000 lb	$23 00
Liverpool House Cannel " " "	25 00
American " " " "	16 00
American Orrel " " "	11 00
Red Bank Cannel " " "	14 00
Cumberland " " "	7 00

Baltimore, Md. Oct. 27, 1875.

Reported by our Special Correspondent.

ANTHRACITE.

Wholesale or Trade Prices per 2240 lb.

Wilkes-Barre "Lee" or "Diamond," Pittston and Plymouth. White ash.	In cars at depot.	By boats afloat.
Lump and steamboat	$4 80	$4 65
Broken	5 46	5 31
Egg	5 77	5 62
Stove	6 02	5 87
Nut	4 90	4 87
Shamokin, (red or white ash), and "Boston," freeburning white ash,		
Egg	5 80	5 62
Stove	6 00	5 87
Lykens Valley, red ash,		
All sizes	6 30	9 12

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per 2240 lb. $7 00@8 00.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point	4 15	4 10
West Virginia f. o. b. at Locust Point		5 50
Youghiogheny Gas, f. o. b. at Locust Point		5 50
Swanton Coal, George's Creek		4 40

Boston. Oct. 27, 1875.

Reported by our Special Correspondent.

CARGO PRICES TO TRADE.

Lingan coal	$ 5 20	Westmoreland and Penn.	6 85
Caledonia	5 00	Waverly Co. Youghiogh'y.	6 80
Pictou	5 60	Cannelton Cannel	11 60
Block House	5 20	Cumberland	5 80@ 6 00
Red Bank Cannel	9 00	Anthracite	6 50@ 7 25
Glace Bay	5 00	" retail	7 50@ 8 00
Sydney	6 25		

Steam sizes are dull, with the exception of Lehigh, which is scarce just at present. Manufacturers are buying sparingly, as they except a light winter business. House sizes are in good demand from jobbers and retailers, and the principal part of the shipments from the coal regions is of this description. Bituminous coal is in light request, as heavy shipments were made and many contracts filled earlier in the season when freights were lower than now. The present freight rates from Philadelphia are $1 75 to $1 80 per ton; from New York, $1 30 to $1 35; Baltimore $1 80, and from Georgetown, $1 80.—*Commercial Bulletin.*

Buffalo, N. Y. Oct. 27, 1875.

Reported by our Special Correspondent.

Freights to Chicago and Milwaukee $1—with vessels scarce. Quotations are as follows:

ANTHRACITE.

	Afloat. f.o.b.	Retail. Deliv'd.
Grate	$6 40	$7 40
Egg	6 40	7 40
Stove	6 85	7 85
Nut	6 60	7 60

	Lump.	Run of Mine.	Nut.	Slack.	Nut & Slack.
Connellsville Coke	$5 50	....	....	....	....
Brookfield Coal	....	....	....	....	....
Briar Hill	4 50	....	....	....	3 00
Youghiogheny	4 75	....	....	....	....
Monterey	3 75	3 50	3 25	2 50	....
Catfish	3 75	3 50	3 25	2 50	....
Stoneboro	....	....	3 25	2 50	....
Sterling Cannel	5 50	....	....	....	....
Buffalo Coal Co.	3 50	3 25	....	2 30	....

Chicago, Ill. Oct. 26, 1875.

Specially reported by Messrs. RENO & LITTLE, Coal Merchants.

Retail prices per ton of 2000 lb. delivered to buyer.

Prices of coal without change.

BITUMINOUS.

Lehigh Lump	$10 00	Briar Hill and Erie	@ 7 00
Lehigh grate and egg	10 00	Walnut Hill, Pa	@ 6 00
Lehigh stove and chest.	10 50	Midway, Pa	@ 6 00
Lackawanna, Wilkes-Barre and Pittston*		Cannel	@ 9 00
Grate and egg	9 00	Blossburg	8 00
Stove and chestnut	9 50	Indiana Block	5 50
		Hocking "Brooks"	6 00
		Wilmington and Illinois	4 50

* 50 cents off these prices for car load lots to country dealers and manufacturers.

Cincinnati, O. Oct. 25, 1875.

Reported by our Special Correspondents.

Per ton of 2000 lb.	Bush.	Ton.
Youghiogheny, or Pittsburgh, afloat	10 c.	——
Pomeroy coal	8 c.	——
Kanawha "	10 c.	——
Cannel coal, according to quality	—	——
Semi-Cannel	—	——

The following are the retail prices delivered

Youghiogheny	15@16c. $4 25
Pomeroy	11c. 3 00
Cannel	—c. ....
Kanawha Semi-Cannel	13c. 3 60
Anthracite	9 50@11 00
Foundry coke	10c. ——
Coke, hard and soft	10c. ——

Cleveland O. Oct. 25, 1875.

Specially reported by Messrs. WARNER, BATES & Co.

WHOLESALE.

Per ton of 2000 lb. f. o. b. vessels.

	For vessels,	On cars.
Youghiogheny Gas Coal	$4 40	$4 15
Cannel	4 50	4 15
Blossburgh	5 00	5 00
Briar Hill Block Coal	3 80	3 60
Hocking Valley	3 25	3 10
Straitsville Coal Co., lower vein	3 25	3 10
Mineral Ridge	3 10	3 25
Massillon	3 10	3 30
Tuscarawas Valley	2 85	2 70
Columbiana	2 80	2 60

RETAIL DELIVERED.

	Lump.	Nut.
Briar Hill	$5 00	$3 50
Massillon	4 50	4 00
Mineral Ridge	4 50	4 00
Columbiana	3 25	3 00
Stillwater	3 25	3 00
Tuscarawas Valley	3 25	3 00

ANTHRACITE DELIVERED.

	Grate.	Egg.	Stove.	Chestnut.
Lehigh	$9 00	$9 00	$9 50	$9 25
Wilkes-Barre	7 85	7 85	8 35	8 10
Lackawanna	7 85	7 85	8 35	8 10

—*Manufacturing and Trade Review.*

Detroit, Mich. Oct. 23, 1875.

Specially reported by Messrs. ROBINSON & KEYS, Dealers in all kinds of coal.

Per ton of 2000 lb.

Lehigh Lump, per ton	$10 50	Blossburg	8 50
Lehigh " prep.sizes.	10 00	Briar Hill	7 50
Wilkes-Barre, Grate and Egg	9 00	Willow Bank	7 00
Wilkes-Barre, Stove and Nut	9 50	Erie	7 50
		Massillon	7 00

Erie, Pa. Oct. 23, 1875.

Reported by our Special Correspondent.

Wholesale, per ton of 2000 lb. Bituminous f. o. b.

Briar Hill lump	$3 75	Beaver lump	$3 50
Midway	3 25	Cat Fish	3 00

Indianapolis, Ind. Oct. 23, 1875.

Specially reported by Messrs. COBB & BRANHAM

Prices unchanged.

Wholesale on board cars, and retail delivered to consumers. Per ton of 2000 lb., bushel of 70 lb.

BITUMINOUS.

Indian Creek, per ton	$2 75	Peytona cannel, per ton	7 00
White River, "	2 75	Indiana Cannel	0 50
Brazil Block, "	2 65	Hocking Valley	4 25
Highland, grate, "	2 25	Youghiogheny	4 75
Block coal, nut, per car	18 00	Blossburg (smithing)	6 50
Highland " "	18 00	Piedmont "	6 50
Block Slack "	17 00	Gas coke, per bushel	10

ANTHRACITE (Lackawanna and Wilkes-Barre.)

Broken	$9 95	Nut	9 80
Egg	9 95	Stove	10 25

Owing to the Miner's strike there is no Lehigh coal in this market.

Retail, per bushel, delivered.

Sand Creek	15c.	Block Nut, steam	8
White River	14	" Slack, "	
Brazil Block	14	Peytona Cannel	4
Highland grate	14	Indiana "	24
Block-Nut, domestic use	12	Youghiogheny	20
Highland Nut, " "	12	Blossburg	26
" " steam	8	Piedmont	26

GAS COKE (measured.)

Crushed	15c.	Lump	12c.

ANTHRACITE.

Wilkes-Barre and Lackawanna (all sizes) $10 per ton.
Lehigh, retail $11 50 per ton,

Louisville, Ky. Oct. 23, 1875.

Specially reported by Messrs. BYRNE & SPEED.

WHOLESALE.

	per bushel		per bushel
Pittsburgh	10c.	Pine Hill	—
Raymond City	9c.	Kentucky	—

RETAIL.

	per bushel		per bushel
Pittsburgh	14c.	Peytona Cannel	20@22c.
Raymond City	13c.	Buckeye "	—
Pine Hill	13c.	City-made Coke	11c.
Kentucky	12c.	Anth., per ton, $10 00 to 10 50	
Screened Pittsburgh per load			$3 00
Screened Raymond City			2 75
Pine Hill (Kentucky)			2 75
Cannel			$5 to 5 50

Milwaukee, Wis. Oct. 23, 1875.

Specially reported by Messrs. R. P. ELMORE & Co.

Retail price per ton of 2000 lb.

Lehigh Lump	$10 00	Briar Hill, select	$8 00
Lehigh Prepared	11 00	Blossburg	8 00
Lackawanna (all sizes)	10 00	Cannel	8 00
Pittston	10 00	Pittsburgh	7 00
Scranton	10 00	Steam coal	5 00

New Orleans, La. Oct. 23, 1875.

Specially reported by Messrs. P. & R. DE VERGES, Wholesale and Retail Dealers in Pittsburgh, Anthracite, Cannel and other Coals

Pittsburgh coal, retail, per bbl	60c.
" " wholesale	35c.
" steamboats, per box	50c.
" to manufacturers, per bbl	55c.
" shipments, per hhd	$6 00
Anthracite, wholesale, per ton	9 50
" retail, "	12 50
Virginia Cannel, per bbl	80c.
Scotch " "	
Mt. Carbon, wholesale, per bbl	
" " retail, "	
St. Bernard, wholesale, per bbl	
" retail, "	

Pittsburgh, Pa. Oct. 28, 1875.

COAL.—There is, so far as we can learn, nothing specially new or important in the coal trade deserving of notice. Trade continues fairly active; operators by rail have about all they can do, but it is still complained that prices are cut so close that there is little or no margin for profit. Bituminous may be quoted at 5½ @6c per bushel, on cars at works, for lump, and about one cent per bushel less for nut. The down river markets are reported firm, as stock is going down. Anthracite coal, the consumption of which is steadily increasing here, is selling at $6 50 per ton by the car load on dock, and $7 delivered.

COKE.—There is a fair degree of activity, indeed it is even better than could reasonably be expected, taking the depressed condition of the iron trade into consideration. As noted in our last review, however, the consumption is increasing, as it is being substituted in many places by furnacemen for coal, as in addition to making a better quality of iron, it is found to cost little more. What is particularly desired is that the railroads give our coke men a lower rate of freight, and they would lose nothing in so doing, as increased shipments would more than make up for the reduction. We continue to quote at $2 50@2 75 per ton delivered free on cars in Pittsburgh.—*American Manufacturer.*

Richmond, Va. Oct. 23, 1875

Specially reported by S. H. HAWES, Dealer in Coal.

Per ton of 2240 lb., f.o.b.

Kanawha Cannel	$12 00	New River Bituminous	$4 50
" semi-Cannel	4 75	Clover Hill Coal	4 25
Coalburgh Splint	4 90	James River Bitum	3 30
Lewiston "	4 90	" " Carbonite	5 80
Kanawha Gas coal	4 50		

San Francisco.

From the *Commercial Herald*, Oct. 14, 1875.

Imports from January 1st to Oct. 1:

Anthracite tons	8,644	English, tons	40,943
Australian, tons	99,363	Vancouver Island, tons	49,555
Coos Bay, tons	26,722	Rocky Mountain, tons	53
Cumberland, tons	6,871	Seattle, tons	46,065
Mt. Diablo, tons (8 mos)	109,712	Bellingham Bay, tons	8,545

We remark a better tone to the market for Australian. Wallsend cargoes may now be quoted at $8 75@9; Sydney, $8 25@9; Cumberland in bulk, $14@15; in casks, $16@18. The arrivals embrace the *Remington*, from N. S. W., with 1,325 tons: *Imperial*, from Baltimore, 1,659 tons. The several mines at Seattle are producing largely, the quality good; so also of the Wellington and other mines in British Columbia. The arrivals of late from Bellingham Bay and Coos Bay are not as great as heretofore. Stocks in yard are very heavy, causing a sluggish market for nearly all descriptions. We quote Bellingham Bay at $8 50; Coos Bay, $10; Cal. Mt. Diablo Steam, $6 25@8 25 for fine and coarse respectively; Cumberland, $16@18; Nanaimo, $9 50@10; Seattle, $9 25@10; Anthracite, $15@18. Lehigh jobbing at $25 @28. The *Aureola*, from Seattle, brings 1,300 tons.

The following gives the comparative imports for the first nine months of

Foreign.	1874. Tons.	1875 Tons.	Increase. Tons.	Decrease. Tons.
Australian	77,652	99,363	21,711	.....
English	10,608	40,943	30,335	.....
Vancouver	39,750	49,555	9,805	.....
Eastern.				
Anthracite	7,665	8,644	979	.....
Cumberland	8,971	6,871	....	2100
Domestic.				
Mt. Diablo	151,166	109,712	....	41,454
Coos Bay	36,785	26,722	....	10,063
Bellingham Bay	11,385	8,545	....	2,840
Seattle	4,235	46,065	41,830	.....
Rocky Mountain	323	53	...	270
Total	348,540	396,473	104,660	56,727

Our monthly receipts from Mount Diablo mines for a period of years are as follows:

Months.	1871.	1872.	1873.	1874.	1875.
January	9,331	14,671	13,907	15,145	14,181
February	8,832	13,627	10,447	13,589	14,344
March	10,508	16,030	12,178	14,258	12,355
April	9,157	13,062	11,525	15,048	13,732
May	11,457	14,778	14,714	17,287	10,903
June	11,177	13,789	16,606	17,866	10,185
July	10,653	13,821	14,378	17,790	11,618
August	12,490	15,981	17,040	19,261	12,038
September	13,490	15,033	16,355	20,922	10,356
Total	97,095	130,792	127,150	151,166	109,712

Toledo, Ohio. Oct. 27, 1875.

Specially reported by Messrs. GOSLINE & BARBOUR.

Per ton of 2000 lb. on cars.

Hocking Valley	$3 40	Massillon	4 20
Straitsville	3 40	Youghiogheny	5 00
Shawnee	3 40	Blossburg	7 00@7 50
" nut	2 90	Cumberland	7 00@7 50
r Hill	5 50	Connellsville coke	7 00

ANTHRACITE.

Grate, screened	$7 50	Stove, screened	$7 75
Egg, "	7 50	Chestnut "	7 50
Lehigh Lump	9 00		

40 cents to $1 per ton additional for delivery at retail.

Halifax, N. S. Oct. 23, 1875.

Prices per ton of 2240 lb. in gold.

Sydney (old mines)	$4 00	Little Glace Bay	3 35
Gowrie	2 35	Blockhouse	3 35
Victoria		Albion (at Railroad)	4 00

Montreal. Oct. 23, 1875.

Specially reported by Messrs. ROBERT C. ADAMS & Co.

Wholesale per ton of 2240 lb.

Scotch Steam	$5 00	Cape Breton Steam	$4 25
Pictou "	4 85	Newcastle Smiths	6 50

Anthracite at retail, per 2000 lb., delivered.

Egg	$7 50	Chestnut	7 25
Stove	8 00		

Toronto, Ont. Oct. 23, 1875.

The following are present retail prices for coal:

Per ton all sizes.

Lackawanna and Scranton	$7 00
Lehigh Lump and prepared	8 00
Blossburgh	6 50
Soft lump for grates	6 00
Soft nut	4 50

Rates of Transportation on Anthracite Coal to Tide Ports.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From * Penn Haven.	From Mauch Chunk.	From Hazleton**	From Upper Lehigh.	From Ashley and Sugar Notch.
To ‡ Newark, N. J., via Central Railroad of New Jersey	2 60	2 46	2 93	2 93	3 16
‡ Mauch Chunk, Pa., via Central Railroad of N. J.	14	..	56	47	71
‡ Philipsburg, N. J.	99	85	1 32	1 32	1 65
Elizabethp't, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. add.	2 24	2 10	2 59	2 57	2 80
High Bridge, N. J.	2 40	1 95	2 80	2 54	2 72
Somerville and Raritan, N. J	2 80	2 35	3 20	2 35	3 12
Elizabeth, Cranford, Westfield & Elizabethport, for consumption,	2 60	2 46	2 95	2 93	3 16
¶ Jersey City, N. J., and New York, via L. V. RR. and Morris Canal	2 85	2 40	3 17	3 24	3 54
Andover, via Delaware, Lackawanna and Western RR	3 30	3 10	3 70	3 69	3 99
Trenton, Somerset Junction and Greensburg, via P. RR. Belvidere Division	2 65	2 45	3 05	3 04	3 34
Trenton, for shipment, including shipping and wharfage	2 11	1 95	2 45	2 46	2 76

From *Mauch Chunk* to *New York* (towing limits) and Jersey City† via Lehigh Valley RR. and Morris Canal... $2 37

From *Mauch Chunk* to *Philadelphia* via L. V. RR. and North Penn. RR 1 75

††From *Phillipsburg, N. J.* to *Hoboken* for shipment via Delaware. Lackawanna and Western RR., Morris and Essex Division 1 24

From *Lackawanna Junction* to **Auburn, N. Y.*, for shipment, via Southern Central R R. in connection with Pa. and N. Y. R.R. 2 53

From *Lackawanna Junction* to ‖*Weedsport* for *Rochester and Charlotte* 2 59

From *Lackawanna Junction* to *Sterling* for *Oswego, N. Y.*.. 2 62

‖ To this point for all places between Rochester and Buffalo the rate is 2 53

* The rate to this point for Syracuse is 2 08

** Rates on line coal from Hazleton are 10c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

† Transportation on Coal destined for re shipment from this point is 20c. less than above rate.

†† The rate for consumption to this point is $1 80.

Schuylkill Coals. per ton of 2240 lb.	From Pine Grove.	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.
To *Port Richmond*, for shipment, via P. & R. R. R., Main Line	2 12	2 07	2 00	1 99	1 92
Philadelphia, Retail yards	2 22	2 17	2 10	2 09	2 02
Harrisburg, via Lebanon Valley Branch	1 35	2 02	1 95	1 94	1 87
Allentown, via East Pennsylvania Branch	1 70	1 65	1 58	1 57	1 50
Lancaster, and Points on Lancaster Branch, via R. & C. R.R	1 82	1 77	1 70	1 69	1 62
Dauphin, via Schuylkill and Susquehanna Branch	85	....	1 43	1 42	1 35
Slatedale Junction via Berks and Lehigh Branch	1 88	1 83	1 76	1 75	1 68
Lebanon, via Lebanon and Tremont Branch	96	....	....	....	....
From *Tamanend* to *Catawissa*, via Catawissa and Williamsport Branch Railroad					94
From *Tamanend* to *Williamsport*, via Catawissa and Williamsport Branch Railroad					1 39

* From *Port Clinton* to *Philadelphia* via Schuylkill Canal, including freight and charges for the use of cars and barges, and for tolls (exclusive of cost of unloading)... 1 69

* From *Port Clinton* to *New York*, within towing limits, " 53d street 2 71

For shipment via Main Road or Schuylkill Canal, one and one-half cents per ton per mile, and two cents per ton additional, to Port Carbon, Mount Carbon, Schuylkill Haven, Pine Grove, Tamaqua, or Port Clinton, for Canal, as the case may be.

Coal sent to points on the Catawissa and Williamsport Branch will be charged one and one-half cent per ton per mile, and two cents per ton additional to Tamanend.

The rates of freight and tolls on lump and steamboat coal (except that sent to Richmond for shipment) will be twenty per cent., and on broken coal will be ten per cent. less than the above rates.

* The charge from Schuylkill Haven to Philadelphia or New York is 11c. additional to these rates.

On and after July 5th, the Drawback of ten cents per ton now paid on shipments of Anthracite Coal from Schuylkill Haven and Port Clinton, that have passed Fairmount Locks to Philadelphia and vicinity, will be discontinued.

CANAL TOLLS, exclusive of towage, Bordentown to New Brunswick, when towed by the Company's Steam Tugs:

For Anthracite Coal ..... 35c.
Bituminous and Semi-bituminous Coal... 35c.

Freights.

Per ton of 2240 lb.

Representing the latest actual charters up to Oct. 29, 1875.

Ports.	From Philadelphia.	From Baltimore and Georgetown.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Augusta, Me	....	2 25	....
Albany	*85	1 70	....
Amesbury, Mass	....	....	....
Bangor, Me	†2 00	2 00	1 30
Bath, Me	1 60	1 70	1 30
Baltimore	....	....	....
Boston, Mass	§1 70	1 85@2 10	130
Bridgeport, Ct	*85	1 50	80
Bristol, R. I	....	....	90
Cambridgeport, Mass	§1 50@1 60	....	1 30
Derby	....	1 60	....
Dighton	....	1 65	....
East Cambridge	1 60§	....	§1 30
Fall River	1 30@1 35	1 60	90
Hackensack	....	....	....
Hallowell, Me	....	....	....
Hartford	1 75	2 40	1 25
Hoboken	†85	1 30	40
Hudson	....	1 65	....
Jersey City	....	1 30	40
Lynn, Mass	†1 85	.. ..	†1 30
Middletown	....	....	1 00
Mystic	....	....	....
Newark	....	....	....
New Bedford	1 35	1 65	90
Newburyport	1 65	1 80	1 45
New Haven	*85	1 50@1 55	90
New London	1 45	1 60	85
Newport	1 35	1 45	90
New York	85†	‖1 40	40
Norfolk, Va	85	60	....
Norwalk	1 45‡	1 60	80
Norwich	1 50‡	1 65	90
Pawtucket	1 55‡	1 65	‡100
Philadelphia	....	80	....
Portland	1 60	1 70	1 30
Portsmouth, N. H	1 85	1 80	1 45
Providence	1 50	1 60	90
Petersburg, Va	....	90	....
Portsmouth, Va	....	....	....
Poughkeepsie, N. Y	*85	1 50	....
Richmond, Va	90	70	....
Rockport	....	....	....
Saco	2 00	....	....
Sag Harbor	....	....	1 00
Salem, Mass	1 65	1 70	1 30
Salisbury Pt., Mass	....	....	1 50
Savannah, Ga	....	1 50	....
Stamford	*85	....	90
Stonington	....	....	....
Taunton	.. .	..	1 30
Trenton, N. J	....	....	....
Troy	....	....	....
Warren, R. I	....	....	90
Washington, D. C	1 00	....	....
Wareham	....	1 65	....
Weymouth	....	1 80	....
Wilmington, Del	....	85	....
Wilmington, N. C	....	1 50	....

* And discharging and towing. † And discharging.
‡ And towing. § 30. per bridge extra.
‖ The rate to this point by barge is $1 65.

From Philadelphia to all places on the Hudson River the rate is 85c., and discharging and towage according to destination.

Freight on Nova Scotia Coals.

Pictou, Nova Scotia, to	New York	$1 80
" " "	Portland, Me	2 00
" " "	Montreal, Canada	2 35
" " "	Quebec. "	1 80
" " "	Halifax, N. S.	1 25

Pilotage for vessels of from 80 to 150 tons, $6 inward and $4 outward. From 150 to 1000 tons. 10 to $17 inward and $6 to $12 outward. Vessels of 1000 tons and upwards, 2c. per ton inward and 1½c. per ton outward.

Towage 3c. per ton. Trimming 3 hatch vessels, 6c. per ton. Two hatch vessels 7c. per ton.

Delaware and Raritan Canal.

Tolls and Steam Towage.

Per 2240 lb. Cargoes to exceed 110 tons.

From Fairmount to New York, towing limits within 53d st.			74c.
" Greenwich	"	Bituminous	64c.
" "	"	Anthracite	69c.
" Lambertville	"	Anthracite	62c.
" Port Richmond	"		68c.
" "	"	Semi-bituminous coal,	63c.
" Philadelphia	"	Cumberland "	58c.
" Trenton	"	Anthracite "	37c.

Towing.

From foot of 23d Street, East River, and *return, per ton.*

	cts.		cts.
Bridgeport, Conn	33⅓	New Haven and Norwalk, Conn	33⅓
Hartford and Stonington, Conn	75	New London, Conn	60
Norwich, Conn	68	*Derby, "	33⅓
Stamford, Conn., per boat	$75	Harlem, N. Y., per boat	$18
Whitestone, L. I	$30	Glen Cove, L. I	50

	cts.
Manhattanville, via Hudson River, per ton	8
Harverstraw and Peekskill, via Hudson River	16
West Point and Cold Spring " "	17
Rondout " "	23
Yonkers, boats of 100 tons capacity " " per boat	$15
Sing Sing and Peekskill " " " "	20

* $50 per boat extra is charged for towage to this point.
Boats having less than 200 tons will be charged the same to Eastern points as if carrying that quantity.

THE BELGIAN IRON TRAE.

Specially reported by Messrs. E. MULLER & Co.

ANTWERP, October 15, 1875.

Our iron market continues dull and orders scarce. We quote to-day:

Bars, Ordinary	£6 10/@£— —
Nail Rods, "	6 10/@ — —
Nail Sheets, "	7 15/@ — —
Hoops, "	7 — @ — —
Angles, "	7 — @ — —
Rails, Contractors	6 15/@ — —
" Bessemer	9 10/@ — —
Girders	7 00/@ 9 10/
Zinc, rolled	28 10/@ — —

Very little doing in coals.

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold:

Flat Iron, not less than 1, nor more than 6 inches wide, nor less than ⅜, nor more than 2 inches thick. *Round Iron*, not less than ¾, nor more than 2 inches in diameter, and *Square Iron*, not less than ½, nor more than 2 inches square per pound 1 c.

Flat, Round or Square Iron, of larger or smaller sizes than the above mentioned, per lb ..... 1½c.

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron in bars.

Provided, that none of the above iron shall pay less than 35 per cent.

Railroad Bars—Iron ..... 70c. per 100 lb.

Railroad Bars—Steel ..... $1.25 per 100 lb.

Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb ..... 1½c.

Scrap Castings per ton $6 00

" *wrought* " " 8 00

Pig Iron per ton 7 00

Iron ore 20 per cent. *ad valorem*.

Antimony, crude or regulus, 10 per cent.

Copper Ore—On all fine contained therein, 3c. per lb.

Old Copper, fit for manufacture only, 4c. per lb.

Copper, pigs, bars, ingots or plates, 5c. per lb.

" sheets, bolts, nails, spikes, rods, pipes, &c., 45 per cent.

Tin, in bars, blocks or pigs, and grain tin, free.

Tin Plates, or sheet, and terne or taggers tin, 1 1-10c. per lb.

Lead—Bars or pigs, 2c. per lb. Old lead, for manufacture only, 1¼c. per lb. Pipes, shot and sheets, 2¼c. per lb.

Zinc, in blocks or pigs, 1½c. per lb.; in sheets, 2¼c. per lb.; manufactures of, 35 per cent.

Quicksilver free.

New York.

FRIDAY EVENING, Oct. 29, 1875.

American Pig.—The Thomas Iron Company report sales of 1,200 tons of No. 1 foundry at $24; 1,200 tons of No. 2 at $23; and 600 tons of white and mottled at $20. These quantities were sold in lots to different buyers, and this company believes that business has improved, while the balance of the companies and dealers can note no improvement in trade. The general market prices appear to be on the basis of $24 for No. 1, although there are some holders who say they are not willing to part with their iron at these figures; in cases where buyers are desirous of procuring a special brand they are sometimes compelled to pay higher rates, while there have been sales at even lower ones. The approach of the close of navigation necessarily adds a little life to business.

Scotch Pig.—There is no change to report in this market. The demand is light, with but small arrivals. We note a sale of 100 tons of Summerlee at $31 50, and small sales of other brands at $25 50@$30 for Eglinton; $33 for Coltness; $32 for Glengarnock, and $32 50 for Gartsherrie. The approach of the close of navigation maintains an active business in the Glasgow market, although during the week ending the 15th inst., stocks in CONNAL & Co.'s stores had increased to 74,185 tons, or an increase of 656 tons for the week. Cable advices report prices as being more firm.

Rails.—A few hundred tons of English, upon which duty had been paid, have been sold on private terms. 1,000 tons of 30 lb., for a Southern road, are reported as sold at $52 at St. Louis. We quote iron at $45@$50, at mills, and steel at $70. The Lackawanna Coal and Iron Company's new Bessemer steel works, at Scranton, cast their first ingot on the 23d instant. An additional furnace will be put in blast to furnish these works with Bessemer pig. We shall give the works further notice in a future number.

Old Rails.—We note a sale of 600 tons on private terms, and quote at $26.

Scrap.—We note sales of over 1,000 tons of old car wheels at $20, and 600 tons of No. 1 wrought scrap on private terms. We quote wrought scrap at $31 50@$32.

Baltimore. Oct. 27, 1875.

Specially reported by Messrs. R. C. HOFFMAN & Co.

Our iron market shows no signs of improvement and we repeat last week's quotations, as follows:

Baltimore Charcoal	$32@35	Anthracite No. 1	$21@22
Virginia Charcoal	31@34	Mottled and White	19@20
Anthracite No. 1	25@26	Charcoal C. B Blooms,	70@75
" No. 2	23@24	Refined Blooms	60@65

Boston. Oct. 28, 1875.

PIG is, if anything, more unsettled than ever, and buyers patch out their small wants with more or less indifference to brand, the temptations being in quotations' which, as previously reported, are gauged upon the ideas of the buyers' postings upon the market. The reports from the primary markets, both through the press and by private correspondence, indicate that the undercurrent of demoralization, so long prevalent in this market, has cropped out at home; that holders, abandoning the idea of breaking the markets at the outports, and holding up their primary points, have turned in for selling, as it were, to "most any feller" who looked rugged enough to carry a load. In fact, just now pig iron seems to want to shift from banks and note brokers who control by advances. In this market prices are hardly quotable.

BAR has hardly had as good a trade as was reported a week ago. There is no advance on $57 50 for warranted, either in round lots or in a jobbing way. A little spurt occured early in the week in shafting irons, but at prices incidental with favorite brands, and current quotations on refined are $57 50 and common at $51.

STEEL has had a fair week in machinery, and a little doing in tool. The Ames Plow meeting has had a depressing influence, and dealers are again exercising renewed circumspection over credits. Prices are firm on foreign and American. We quote American tool 14@15c; American machinery, 9@9½c: Bessemer tires 7@7½c; Sweet's Excelsior tire, 8½@12c; English tool, 16@18c gold.

COPPER is dull and steady, with manufacturers offering to take small lots at 23½c and holders asking 23¾c. There is nothing new as regards the situation, except the associated press despatches that navigation is to close early on the lakes, and the quoted prospects that shipments of copper are to immediately cease,—possibly entertaining gossip for newspaper publishers to pay for, but of no practical use to the mining companies, the thing being so thin and following so closely upon the manufacturers' meeting. For manufacturers we quote new sheathing 30c; bolts and braziers 31c; yellow bolts 20@29c.

LEAD is having very little business, prices feeling a shade easier. We quote pig 6¼@6¾ for domestic and 6¼@6½c for foreign; Sheet and Pipe Lead 9c currency; tin-lined pipe 10½c; bar lead 9c, less usual trade or 10 per cent discount.

ANTIMONY is firm, with very little doing, quoting from 13½c.@13½c, as to lots bought.

SPELTER is strong and dull at $7 55, 30 days, and $7 40 prompt cash, all currency. Silesian is having a trivial business at $7 30.

TIN stands heavy and unchanged, buyers and sellers apart, without any peculiar interest with either party. We quote Straits 20c; Banca 24c; Refined English 19¾@20c, gold. Plates are active; we quote Charcoal I. C., $7 25@7 75; Coke $6 50@6 75; and Terne at $6 15@6 50, gold.—*Commercial Bulletin.*

Chicago. Oct. 25, 1875.

Specially reported by Messrs. ROGERS & Co., dealers in Scotch and American pig iron.

No. 1 Coltness	$40 00@ ....
No. 1 Gartsherrie	40 00@ ....
No. 1 Summerlee	38 00@ ....
No. 1 Glengarnock	37 00@ ....
No. 1 Eglinton	36 00@ ....
Warner's "American Scotch"	34 00@ ....
Massilon No. 1 Foundry	31 00@ ....
No. 1 Grand Tower Mo. ores (Bituminous)	29 00@ ....
No. 2, " " "	28 00@ ....
No. 1 Mill	25 00@ ....
No. 1 Foundry, Ohio	28 00@ ....
No. 2 "	27 00@ ....
No. 1 Hanging Rock (charcoal)	30 00@ ....
No. 2 " "	24 00@ ....
Union "A" 1 (Anthracite)	28 00@ ....
Union "B" 1 (Anthracite)	26 00@ ....
No. 1 Lake Superior (charcoal)	30 00@ ....
No. 2 Lake Superior "	28 00@ ....
No. 3 Lake Superior "	30 00@ ....
No. 4 Lake Superior "	32 00@ ....
Bessemer Steel Rails	72 00@ ....
New Iron Rails	50 00@ ....
Old Rails	28 00@ ....

Cincinnati. Oct. 26, 1875.

Specially reported by Messrs. TRABER & AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

Below we give you the closing quotations of our pig iron market, viz:

CHARCOAL.

Hanging Rock, No. 1 Foundry	$26 00@	—4 mos
" No. 2, "	24 00@	—4 mos
" Mill	22 00@23 00	—4 mos
Tennessee No. 1, Foundry	24 00@24 50	—4 mos
Tennessee, No. 2, "	22 00@23 00	—4 mos
" Mill	22 00@23 00	—4 mos
Missouri, No. 1, Foundry	.... @	—4 mos

STONE COAL.

Ohio, No. 1, Foundry	23 00@24 00	—4 mos
" No. 2, "	22 00@23 00	—4 mos
Ohio Mill	21 00@22 00	—4 mos
Missouri, No. 1 Foundry	27 00@28 00	—4 mos
" No. 2, "	26 00@27 00	—4 mos
" Mill	26 00@27 00	—4 mos

CAR WHEELS.

Hanging Rock, C. B	40 00@50 00	—4 mos
Tennessee "	30 00@35 00	—4 mos
Missouri "	35 00@40 00	—4 mos
Alabama "	30 00@35 00	—4 mos

BLOOMS.

Charcoal..... 60 00@ 80 00—cash

SCRAP IRON.

Cast..... 50c.@ 80—cash
Wrought..... 1 00@1 30—cash

Louisville. Oct. 26, 1875.

Specially reported by Messrs. GEORGE H. HULL & Co.

With the exception of car wheel foundries, the consumers of pig iron are generally full of work, and the demand for metal is good.

The stock of choice Hanging Rock Foundry is nearly exhausted, and better prices are being obtained for this grade of iron.

The usual time, four months, is allowed on the quotations below.

HOT BLAST—CHARCOAL.

No. 1 foundry, from Hanging Rock Ores.....$25 00@26 00
No. 2 " " " " ..... 23 00@24 00
No. 1, Mill, from " " ..... 23 00@24 00
No. 1, foundry, from Alabama, Georgia and Tennessee ores ..... 22 00@23 00
No. 2, foundry, from Ala., Geor's and Tenn. ores 21 00@22 00
No. 1, Mill, from " " " " " 23 00@ 24 00

HOT BLAST—STONE COAL AND COKE

No. 1, foundry, from Hanging Rock ores..... 23 00@ 24 00
No. 2, " " " " ..... 22 00@23 00
No. 1, Mill, " " " " ..... 21 00@ 22 00
No. 1, foundry, from Ala. Ga. and Tenn. ores.. 23 00@24 00
No. 2, " " " " ..... 22 00@23 00
No. 1, Mill, " " " ..... 21 00@22 00
No. 1 foundry, from Missouri ores..... 24 00@25 00
No. 2 foundry, from Missouri ores..... 24 00@25 00
No. 1 Mill, from Missouri ores..... 25 00@26 00

COLD BLAST—CHARCOAL.

Car Wheel from Hanging Rock ores..... 35 00@40 00
" " Tennessee " ..... 28 00@30 00
" " Alabama and Georgia ores..... 28 00@30 00
" " Kentucky ores..... 28 00@40 00

Milwaukee. Oct. 26, 1875.

The following are the present prices, per ton of 2,240 lb. :—

Frankfort L. S. Charcoal, No. 1. .....$30 00
" " " No. 2 & 3..... 28 00
" " " No. 4 & 5..... 31 00
" " " No. 6..... 35 00
Mil. Anthracite L. S., No. 1..... 30 00
" " " No. 2..... 28 00
Wisconsin Iron, No. 1..... 26 00
Mahoning Valley Bit's No. 1..... 32 00
" " " No. 2..... 30 00

Pittsburgh. Oct. 27, 1875.

Specially reported by A. H. CHILDS, Esq.

There is no improvement in pig iron and very little is changing hands, excepting where the necessities of the seller lead to a decided concession in price. At the same time the stock of good iron is not large, and holders are still hopeful that the market will take a more favorable turn. Quotations are :

No 1. foundry.....$26 00@27 00—4 mos
" 2. " ..... 24 00@25 00—4 mos
Gray forge ..... 23 00@24 00—4 mos
White and mottled..... 20 00@22 00—4 mos
Hot blast charcoal..... 00 00@00 00—4 mos
Cold blast charcoal..... 00 00@00 00—4 mos

PIG IRON.—The general position of the market has not changed much since the date of our last report. While its general position is favorable to sellers, yet standard open gray red-short irons are still held with considerable tenacity at full prices, $24 4 mos., and it is inferred in regard to those sales reported at $23@$23¼ 4 mos., that the iron was not strictly first-class in point of quality; we are cognizant of $23½ 4 mos. having been refused for a lot of 200 tons of the iron of the character in question, within the past few days. Common and mixed stock, however, is very dull and can be obtained at almost any price. There has been considerable activity in charcoal iron within the past few weeks, but as the most of the sales reported were on private terms, it is fair to infer in the present depressed condition of the market, that the prices were away down. We hear of some lots of hot blast having been sold to mills here at $25@$25½, 4 mos. The demand for all grades of foundry iron continues very small, and what is still worse, there is but little prospect of early improvement.

QUOTATIONS

No. 1 foundry . .. $25 00@$26 00—4 mos.
No. 2 foundry .... 24 00@ 25 00—4 mos.
Gray forge . . 23 00@ 24 00—4 mos.
White and mottled.. 21 00@ 22 00—4 mos.
Hot blast charcoal.. 25 00@ 30 00—4 mos.
Cold blast charcoal. 30 00@ 35 00—4 mos.

MANUFACTURED IRON.—There has been no perceptible improvement since the date of our last review. In addition to the ruinous rates, the demand continues light and orders are remarkably scarce for this season of the year. Negotiations are pending between manufacturers and puddlers, rollers, etc., etc., with a view of reducing wages; it is said that the cost of puddling is considerably more here than at competing points, and unless the cost of manufacture can be reduced, suspension will be the result. Manufacturers are in much better condition for stopping than they were at the time of the lock-out last winter as they have but few orders; and as the case now stands, there is no inducement to solicit business, whereas, during the lock-out, many of them were so pressed by their customers they could not hold out any longer without losing their trade.

STEEL.—Trade keeps up better than could reasonably be expected under existing circumstances; prices have been cut so close that there is little or no margin for profit. One good effect of the low prices is that they have been the means of increasing the consumption of American steel, and, in consequence, the prejudice which many consumers had in favor of foreign and against American, is rapidly dying out, the marked difference in the cost forcing them to give the American a trial.

SCRAP IRON continues exceedingly dull, so much so that it is almost impossible to give quotations. Prices are very low, and a good deal of the stock now in yards of dealers cost more than can now be obtained for it; we were assured by a dealer this week, that he sold a lot of boiler iron the other day at a loss of $3 per ton. No. 1 railroad wrought scrap may be quoted at $1 30@$1 40 4 mos., delivered free at mills. We heard of a sale of good mixed scrap the other day at $1 25, delivered. Car wheels do not appear to be wanted at any price.

Richmond, Va. Oct. 28, 1875.

Reported by ASA SNYDER, Esq.

There is considerable depression here in charcoal iron within the past few days. You can still quote as before, although special rates are obtainable under these figures. The makers, for the most part, are holding at quotations unless it be the new brands, which are offered very low.

Virginia Cold Blast Charcoal Pig Iron.....$30 to $35
" Warm " " " ..... 28 to 32
" " " Coke " " 1 X ..... 26 to 27
" " " " " 2 X ..... 25 to 26
" " " " " 3 ..... 24 to 25
" Anthracite 1 X..... 27 to 29
" " 2 X..... 26 to 27

San Francisco, Cal.

From the *Commercial Herald*, of October 14, 1875.

There have recently been held several meetings of the trade with a view of regulating and altering the prices of all standard goods. A committee has now been appointed to revise the list and report progress at a future meeting. We have nothing of encouragement to report. The stock of pig iron is excessive, having been largely increased by recent arrivals. The spot price for Scotch is $35@36; the same, to arrive, $32@33. The demand for tin plate is surprisingly small and quotations are entirely nominal. The stock is thought to be large. The supply of Sydney tin is liberal, with a limited demand; price, 22½c. Banca pig tin is held at 25@26c. The stock of yellow metal is not large, and when suits are required they are ordered from the East by rail. The market for American cast steel is well supplied, and is fast taking the place of the best brands of English. The trade are carrying large stocks of manufactured iron—bar, sheet, bundle, etc.—prices of which remain the same as for a long time past. Selby's pig, sheet, and bar lead is in good stock, and prices unchanged.

St. Louis. Oct. 26, 1875.

Specially reported by Messrs. SPOONER & COLLINS, Commission Agents for all kinds of Iron.

Our market is dull at present. The demand has been light the past week, and prices very low.

Furnaces are inclined to make very low prices when a good round lot is wanted, much below our quotations.

BITUMINOUS.

Missouri, No. 1.....$27@28 | Massillon A No. 1.....$35@36
" " 2.....$25@26 | " B " 1.....$33@34
" " 1 Mill...$24@25 | " " 2.....$32@33

CHARCOAL—HOT BLAST.

Missouri, No. 1.....$27@28 | Tennessee, No. 1.....$26@27
" " 2.....$25@26 | " " 2.....$24@25
" Mill.....$24@25 | " Mill.....$23@24
Hanging Rock, No. 1..$28@29 | Georgia, No. 1.....$26@—
" " 2..$26@27 | " " 2.....$26@—
" " 3..$25@26 | " Mill.....$24@—

CHARCOAL—COLD BLAST.

Missouri Car Wheel..$33@35 | Tennessee " " ..$33@35
Alabama " " ..$33@35 | Hanging Rock " ..$50@53

MISSOURI BLOOMS AND BILLETS.

Charcoal Blooms.....$75@85 | Hammered Billets....$90@100
Scrap " .....$70@75

METALS.

NEW YORK, Friday Evening, Oct. 29, 1875.

The aggregate of the business doing in metals is a very fair one, although sales are mostly made in a small way. Some articles are in very good demand, especially from the West. Cable advices report considerable regularity to prices in London.

ERNEST W. S. MURRANT, of London, under date of the 15th inst., says: "A fair business has been carried out during the past week, quotations being pretty well maintained. The Bank rate was yesterday raised (1 per cent.) to 3½ per cent. Should the fluctuations in the Bank Rate be confined within moderate limits, the present reasonable values and general soundness of trade may lead to an advance in some articles before the close of the year."

Gold Coin.—During the week past gold has ranged from 114⅛@116¼, and closed at 116¼.

Bullion.—Fine silver bar is quoted at $1 22½@1 23½, gold, per ounce, and fine gold bar at par ($20 67 gold, per ounce,) to ¼ per cent. premium. The suspension of the production of silver by several of the mines on the Comstock Lode, caused by the destruction, by fire, of the hoisting works of several of the largest mines, has slightly advanced the price of silver bars.

Copper.—Sales of about 600,000 lb., spot and future copper, are reported for the week at 23c., which is the quotation to-day. It is generally reported that there is a movement being made to depress prices for the purpose of buying in the balance of the companies' supplies at low figures. If this can be done, an advance is expected to follow. Chili Bars, in London, are quoted, by cable to-day, at £82 10/. Best selected was quoted, on the 23d inst., at £90.

MR. MURRANT says of copper: "Chili after the announcement of the charters for second half last month (1,500 tons) became firmer and advanced about 20/ per ton, from the lowest point touched last week; but buyers' immediate needs being satisfied, the Market again became flat, and g. o. bs. were sold at £82. Although the course of the Bank rate will, no doubt, have considerable influence on the market for bars, the general feeling is that any change must be for the better. This will probably be the case as with the bulk of the Australian cleared off the market (if it is really gone for good), there will not be room for any considerable fall in bars. The sales of the week were 550 tons g. o. bs. and named at £82 to £83 10/ for cash and arrival."

Tin.—There is nothing doing in a large way. We quote Straits, Refined and L. and F., at 19¾c., nominal, and Banca at 24c., gold. To-day's cable advices quote Straits in London at £85 10/@£86, and at Singapore, $24 per picul.

MR. MURRANT says of tin: "Straits.—After receding to 84/ for cash parcels prices advanced to 86/6 the same day, and a considerable business resulted at about this price. Australian also advanced about 1/6 per cwt. from the lowest point touched. The following figures show the comparative position of tin in this country for the last three years:

	1873. Tons.	1874. Tons	1875. Tons.
Imports to 30th September.....	6,005	6,411	13,248
Exports to 30th September.....	5,436	8,040	7,484
	669	1,629	5,764
Stock in London on 1st Jan.....	960	2,010	2,900
	1,629	381	8,664
Increase against.....	7,045	8,283	———
	8,664	8,664	8,664

"According to the Government figures (Board of Trade) the exports for this year are rapidly approaching in bulk those for 1874, and will, at the close of the year, show about the same. The present tendency appears to be decidedly towards an increase in values, but a relapse now and then may be looked for as only natural in such a sensitive market as that for tin. The week's business consisted of 200 tons Straits, and 100 tons Australian, at 82/ to 86/6 for cash and shipment."

Tin Plates.—There is a very fair jobbing business being done. We quote charcoal tins at $6 50@$6 75, gold, and ternes $7@$7 25; coke tins, $6 50@$6 75, and ternes, $6@6 75. Cable advances to-day report an important advance in the price of Staffordshire coals, with an additional one anticipated. As this will add to the cost of producing plates, it is thought that it must increase their price, in England, at least. The English Board of Trade returns for the first nine months of 1875, show that the exports of plates to the United States were 75,148 tons, as against 68,616 tons for the corresponding period in 1874, and 71,237 tons in 1878.

Lead.—There have been sales of about 140 tons of Newark at 5·65c., gold, and 100 tons of other brands at 5·62½c.@5·65c., gold. The St. Louis market is very firm at 7¼c., currency, with an active demand. Foreign is very quiet at 7⅛@7¼c., gold.

Spelter and Zinc.—The spelter combination has advanced its price to 7·30c., currency, less 1 per cent. for cash, since which there has been but very little business done. Prices are very firm at 9c., gold.

Antimony.—There has been a very fair business done. We quote at 13½c., gold.

Quicksilver.—This market is quoted at 85c. gold per lb., and San Francisco, 80c. The London market according to mail advices of the 15th inst., is a little easier, the nominal quotation being £13 10/. The suspension of work in the Comstock Lode will reduce the consumption of quicksilver considerable, although we are not advised of any change in price on that account. The Quicksilver Mining Company's production for the first nine months of 1875 was 9,198 flasks or over 100 flasks more than during the whole of 1874, and 2,448 flasks more than for the first nine months of 1874.

The San Francisco *Commercial Herald*, of the 14th inst., says: Within the past few days small parcels have been offered on sale at 70@80c. Large holders are yet demanding 82½@85c. The outgoing China steamer of the 15th will, it is said, carry about 2,000 flasks.

Exports by sea for the first nine months of

	1874		1875	
To	*Flasks.*	*Value.*	*Flasks.*	*Value.*
New York.....	75	$ 8,164	287	$ 17,253
Mexico.....	2,825	279,793	3,220	232,973
Chile.....	404	39,888	355	24,803
New Zealand.....	41	4,159	183	9,805
Bolivia.....	134	13,805	...	.....
China.....	300	31,748	11,208	630,244
Japan.....	161	15,117	709	42,949
Central America...	9	850	17	880
British Columbia..	2	207	17	921
England.....	....	....	100	7,050
South America....	200	22,185	2,024	147,234
Australia.....	....	....	415	25,213
Calcutta.....	....	....	10	550
Russian Asia.....	....	....	3	195
Total.....	4,152	$425,916	18,548	$1,142,680

Sundry Quotations.

Fire Brick per 1000 (B. KREISCHER & SON)	$40@45@50 00
Clay retorts 12x20@15@30	30@45 00
Tiles and blocks per 100 cubic inches	12
Ground clay per bbl	2 50
" brick "	4 00
Rosedale cement per bbl	$ 1 15@ 1 20
Portland " "	3 50@ 4 25
Roman " "	3 50@ 4 25
Keenes coarse cement per bbl	8 00@ 8 50
fine " "	12 00@12 50

FINANCIAL.

New York Stocks.

FRIDAY, October 29, 1875.

A moderate amount of business has been transacted at the New York Stock Market during the past week and at slightly improved prices, as compared with the majority of quotations ruling in our last. The most noteworthy feature of the week's operations is the advance of 2 per cent. in the shares of the Central R.R. of N. J., with increased sales. The Delaware, Lackawanna & Western R. R. stock is lower, having fallen 1¼ per cent. from the highest point recorded a week ago. The stock of the Quicksilver Mining Co. continues fairly active, with an improvement of about one per cent. in the quotations of both the common and preferred stock.

The case of the Chesapeake and Ohio Railroad was called at Richmond, Va., on the 22nd inst., in the United States Circuit Court, Judge BOND presiding.

Mr. STORRS, of New York, of counsel for the railroad, read an answer of the company to the bill of the plaintiffs, denying the allegations of the improper management of the road and the proceeds, and praying that Gen. W C. WICKHAM, Vice President of the road, be appointed permanent Receiver.

Mr. MACFARLAND, of New York, counsel for the Trustees of the first Chesapeake and Ohio mortgage, together with the counsel for the second Chesapeake and Ohio mortgage and for certain bondholders, united in the prayer for Gen. WICKHAM's appointment. State Attorney General DANIEL, in behalf of the State, presented a petition asking to be admitted as a party to the suit, claiming that the State was the guarantor of $1,000,000 of bonds of the old Virginia Central Railroad, now the Chesapeake and Ohio, and was also a holder of $2,000,000 of bonds and stocks. The State also claimed a forfeiture of the road to the State, by reason of the non-completion of the road as prescribed by law, and asked for the appointment of Mr. ISAAC H. CARRINGTON as Receiver. Judge BOND took the papers under consideration, and promised to report his decision in three or four days.

The Northwestern Gas and Water Pipe Company, of Bay City, Mich., has failed, with liabilities amounting to $130,000.

At auction, recently, 1000 shares of the Union Consolidated Mining Co., of Penn., sold at 6 per cent.

The following companies hold meetings in this city at the dates annexed: New York Mining Co., Nov. 1st; Empire City Mining Co., Nov. 2nd; Shafer Farm Oil Co., Nov. 6th.

Quotations and Sales of Stocks and Bonds,

For the week ending Oct. 29, 1875.

STOCKS.

	Highest	Lowest	Closing	Shares sold.
Pennsylvania Coal Co	—	—	275	—
Consolidation Coal Co	—	—	47¼	—
Spring Mt. Coal Co	—	—	65	—
American Coal Co	—	—	†50	—
Maryland Coal Co	—	—	†16½	—
Del., Lack., and West. RR. Co.	118⅝	117½	118⅜	3402
New Jersey Central RR. Co.	106½	104½	106	3343
Delaware and Hudson Canal Co.	120⅜	120	120¾	155
Quicksilver Mining Co. pref'd	24¼	22⅝	23	800
" " " Common	18½	17¾	18¼	650
Mariposa Land & Min. Co. various.	9½	8⅞	8⅞	700
St. Louis & Iron Mountain RR.	14	13	14	600
Lehigh & Wilkes-Barre Coal Co.	—	—	—	—
Total Shares sold				9650
Sales for the week previous				10022
Decrease				372

† Asked.

BONDS.

	Sales.		Price
Ches. & O. R. R. 6s, 1st. cou. on	5,000	30¾	@ 31
" " " ex coupon	—	—	@ 25
Central RR. of N. J. 1st Mtg. N.	6,000	—	@112
" " " 1st Cons.	8,000	107	@107½
" " " Cons. Convt.	—	—	@108¾
Del. and H. Canal, 1st Mtg. '94	2,000	—	@107⅞
" " 7s, '77	—	—	@104
" " Reg. '91	—	—	@112½
Del., Lack. & W. R. R., 7s, conv.	6,000	—	@120
" " " " 2d Mtg.	—	—	@112
St. Louis & Iron Mount'n 1st Mtg.	5,000	—	@ 90
St. Louis & Iron M'tn, 2d Mtg.	—	—	@ 54½
Lehigh & Wilkes-Barre Cons.	22,000	95¾	@ 96
Total Sales	$54,000		

Closing quotations, in the absence of sales, represent the latest prices bid.

Philadelphia Stocks.

PHILADELPHIA, Oct. 29, 1875.

The Philadelphia Stock market has presented no feature of special interest during the business of the week. A slight increase of transactions is reported, compared with those recorded in our last, at prices which generally exhibit a fractional advance over quotations ruling then.

At a recent auction sale, $20,000 Pennsylvania R. R. genl. mort. 6s sold at 101.

The Easton and Amboy Railroad is now engaged in laying its second track from Easton to Perth Amboy. The coast traffic on this road has greatly increased.

We take the following from the *Philadelphia Ledger*:

"By the lease of the Catawissa Railroad to the Reading Railroad Company, the Catawissa is to receive from the Reading 30 per cent of gross receipts, the heading agreeing to pay on the 1st of May and November, *after next* November, enough to pay a dividend of 7 per cent on both the preferred stocks and interest on the debt. The common stock gets nothing unless the 30 per cent. of gross receipts amounts to more than dividends for the preferred stocks and interest on the debt."

Bonds are fairly active at a fractional decline.

Quotations and Sales of Stocks and Bonds,

For the week ending Oct. 29, 1875.

STOCKS.

	Highest	Lowest	Closing	Shr's
Lehigh Valley RR. Co	62¾	62¼	62½	348
Pennsylvania RR.	51¾	50¾	51	24582
Reading RR.	56	55¾	55¾	1974
Lehigh Coal and Nav. Co	50¾	50½	50¾	3404
Buck Mountain Coal Co.	—	—	—	—
Fulton Coal Co.	—	—	3½	—
Locust Mountain Coal Co	—	—	—	—
Westmoreland Coal Co.			80	—
St. Nicholas Coal Co.	—	—	1	—
Cambria Iron Co.	—	—	16	—
Crane Iron Co.	—	—	—	—
Emaus Iron Co	—	—	—	—
Pennsylvania Salt Manufact. Co.	—	—	77	176
Total shares sold				30,484
Sales for the week previous				26,121
Increase				4,363

BONDS.

	Sales.	Price
H. and B. T. RR. 1st mortgage, 7s	—	— @103
" " " 2d " "	—	— @104
" " " 3d " cons	1,000	— @ 52
Lehigh Valley RR. 6s, '98	—	— @104
" " " 7s, 1910	3,000	— @109½
" " " con. mtge. 6s reg.	2,000	— @ 99⅝
Pennsylvania RR., 1st mtge. 6s	—	— @103¾
" " gen. " reg. 1910	8,000	101 @101⅜
" " gen. " 6s, cou.	3,000	— @101¼
Phil. & Reading RR. 6s,	—	— @104
" " deb. bonds	10,200	80¼@.80⅜
" " " G. M. 7s, cou. 1911,	—	— @108⅜
" " " 7s, Reg.	1,000	— @108⅜
" " new convertible 7s, '93	18,200	108¼@109
Phil. & Reading C. & I. Co. 7s deb. '92	8,000	— @ 82½
" " " 6s	—	— @ 91½
Lehigh Coal & Nav. Co., 6s '84	8,050	100¾@101
" " " RR., '97	—	— @103
" " " '77	—	— @ 96
" " " conv. gold '82	—	— @104½
" " " gold, '97	1,500	103¾@104¼
Penn. Canal, 6s	—	— @ 69
Penn. and N. Y. Canal, 7s	12,000	— @107
Susquehanna Coal Co. 7s	—	— @ 70
Buck. Mount Coal Co. 6s	—	— @ 97½
Total amount of sales	$75,950	

Closing quotations, in the absence of sales, represent the latest prices bid.

Gold and Silver Stocks.

NEW YORK, Oct. 28, 1875.

A dispatch received at the office of the Virginia Consolidated Mining Co., in San Francisco, on Monday forenoon, Oct. 25th, from the Superintendent of the mine, said:

"Two hundred inches of water broke in from the east wall on the 1400-foot level, this morning. The stream has since been reduced to about ninety inches, and may run out altogether in a few days. Men are now engaged in diverting the water to prevent damage to the mine. The Gould and Curry, Savage, and Hale and Norcross mines are filling in rapidly with all (pumps?) running. All hoisting of ore has been stopped."

Later dispatches to private parties stated at noon that the water was under control, and the general impression is that no great damage will ensue.

But, when on the 26th dispatches announced the destruction, by fire, of the hoisting works of the Virginia Consolidated and Ophir, and the Virginia Consolidated and California mills, a serious panic occurred at the exchange. The following quotations were received by telegraph at the Wall Street News Agency:

	Oct. 26.	Oct. 27.	Decline in 2 days.
Gould & Curry	14	19	7
Savage	59	74	28
Chollar Potosi	58	69	17
Ophir	38	42	18
Hale & Norcross	30	42	13
Crown Point	23	27	3
Yellow Jacket	67	74	16
Belcher	16	17	4
Imperial	9	10	1
Virginia Consolidated	224	261	148
California	53	56	11
Overman	51	47	3
Raymond & Ely	27	24	..
Best & Belcher	49	41	3
Kentuck	14	13	..
Union Consolidated	9	8	..
Alpha	19	17	1
Meadow Valley	4	4	..
Sierra Nevada	14	13	..
Mexican	19	17	2
Caledonia	18	16	1
Eureka Consolidated	15	14	..

Quotations on the 27th show, however, that the first depression has rapidly been succeeded by a better feeling, as it is now expected that the damage can, probably, be repaired in a couple of months, and that the Virginia Consolidated will not stop paying its regular monthly dividends, though they may be considerably reduced in amount.

SAN FRANCISCO, Oct. 28, 1874.

Private despatches from Virginia City, convey the gratifying information that the mines are all right. Men have been through from the GOULD & CURRY mine to the Ophir. There is no fire in the workings, and no damage has been done. The water is decreasing. The damage to the Ophir shaft is limited to a few feet at the top. Work will be commenced in the way of the hoisting of ore in the Consolidated Virginia within sixty days. Meanwhile about 300 tons will be hoisted daily through the GOULD & CURRY shaft from the Consolidated Virginia mine, and we will employ 300 men immediately. If the Ophir had not been burned we would burst through their shaft as well as that of the GOULD & CURRY.

It is now stated that the insurance on the Virginia City property has been greatly underestimated, and that the total loss of the companies cannot fall much short of $2,000,000. It is feared that one or two local companies may go under. The best business men in Virginia City estimate the total loss at $7,500,000

Assessments, with dates when delinquent: Chollar-Potosi, $5, November 17th; Illinois Central, 500, November 16th.

MINING NOTES.

The Baltimore Consolidated has begun the production of ore, and new machineey is being erected. The yield is about twenty-five tons per day, of the average value of $100 per ton. In the north drifts on the 2,000 and 2,200-foot levels of the Savage mine, the water is too hot to permit the miners to work, but the capacity of the pumps is being increased so as to exhaust the water as fast as it flows in.

The amount of ore treated by the various mills employed by the Consolidated Virginia Mining Company, for the month of September, amounted to 17,338 tons. One day's bullion shipments from this mine to the Nevada Bank, recently, amounted to $448,468 56.

The Superintendent of the Belcher Mining Co. says that he is fully convinced that he can net at least $50 000 per month for the next year to come, and still carry on the exploratory work.

The Volcano Gravel Mining Company, capital $2,500,000, has been organized in San Francisco.

The ore product of the Richmond mine, Nevada, which is owned in London, exceeds the capacity of the furnaces, and new ones have been built in San Francisco.

The Georgetown (Colorado) mines are yielding between $4,000 and $5,000 per day, and have been doing so throughout the entire year. Actual bullion shipments average between $12,000 and $18,000 per week, the balance going out as ore.

The Black Bear Mining Company, of Fawyer's Bar, Siskyou County, Cal., are extracting 65 tons of ore per day, which nets $1,500; the average monthly product of this mine amounts to $45,000.

The nine National Gold Note Banks in California give the following aggregate figures, among others, in their official statements made on the first of the present month: Capital stock, $4,699,130; individual deposits, $2,430,849; certificates of deposit, $1,109,000; outstanding notes, $2,171,827; specie and gold notes on hand, $1,060,716.

Copper Stocks.

Specially reported by WILSON W. FAY & Co., Bankers and Brokers, room 7 Traveller Building, 31 State street, Boston.

BOSTON, Thursday Evening, Oct. 28, 1875.

The copper market still remains in a quiet condition Calumet and Hecla advanced in the first part of the week to 161, but this figure brought out stock, and it has receded to 159½. It is reported that their product this month will be some 12,000 tons, the largest they have ever mined in a single month. The north shaft is down 700 feet, and at that depth the lode is charged with considerable copper. Allouez is very quiet, the clique, apparently, doing nothing. At the mine the fifth level, south of the No. 1 shaft, is showing rich ground, and this is expected by its friends to result in increased products. The rest of the market is without animation. Eastern railroad shares attract what little speculation there is, fluctuating between 14⅞ and 22 per cent., closing this P.M., 19¼@19½. We quote copper quiet, 23@23½.

DESCRIPTION.	Par Value.	No. of Shares.	CLOSING. Bid.	Asked.
Allouez	$50	20,000	$14¾	$15¼
Calumet and Hecla	100	80,000	159¼	159⅝
Central	25	20,000	32 50	33 50
Copper Falls	25	20,000	6 00	6 50
Dana	25	20,000	.18	20
Duncan Silver	20	60,000	55	60
Franklin	25	20,000	13 00	13 25
Humboldt	25	20,000	25	30
Madison	25	20,000	20	25
Menard	25	20,000	60	70
Minnesota	25	20,000	2	2¼
National	15	20,000	2 00	2 25
Petherick	25	20,000	65	75
Pewabic	25	20,000	5¼	5⅜
Phenix	25	20,000		
Quincy	25	20,000	40 50	41 00
Ridge	25	20,000	6 25	6 75
Rockland	25	20,000	45	50
Silver Islet	—	—	10 00	20 00
Star	25	20,000	18	35
Superior	25	20,000	25	20
Eastern RR.			19 25	19 75

Gas Stocks.

NEW YORK, Oct. 29, 1875.

Quotations of gas stocks exhibit but few alterations compared with prices ruling in our last. We note a decline of $4 in the shares of the New York Gas Light Com-

pany, and an advance of $2 in those of the Metropolitan of New York. Sales of various stocks to the aggregate amount of over 1200 shares, at within a fraction of our quotation, have been reported to us for the week.

The following were sold at auction during the week, at the prices annexed: $1000 7 per cent. certificates of the Citizens' Gas Light Company of Brooklyn, at $101½, and 145 shares of stocks of the same company at $154½; also scrip to the amount of $1080 of the Metropolitan Gas Light Company of New York, at $105½; and 27 shares of stocks of the same company at $164; also 10 shares of the Metropolitan Gas Light Company of Brooklyn at $113½; 1 share of the Brooklyn Gas Light Company at $264, and 10 shares of the Fishkill, New York, Gas Light Company, par $50, at $7 50 per share.

The November coupons of the bonds of the People's Gas Light and Coke Company of Chicago, Ill., will be paid in New York.

The following list is corrected weekly by GEORGE H. PRENTISS, Broker and Dealer in Gas Stocks, No. 30 Broad street, New York.

COMPANIES.	Cap. Stk.	Par.	Bid.	Askd.
Mutual Gas Light Co., N.Y. City	$5,000,000	$100	107	108
New York " " "	4,000,000	100	148	149
Metropolitan " " "	2,500,000	100	160	162½
Manhattan " " " ...	4,000,000	50	310	315
Harlem " " "	1,850,000	50	135	
Westchester Co. " New York.	466,000	100	100	
Brooklyn " " " Brooklyn..	2,000,000	25	250	
Citizen's " " "	1,200,000	20	154	155
People's " " "	1,000,000	10	101½	102
Nassau " " " ...	1,000,000	25	135	
Metropolitan " " "	1,000,000	100	109	112
Williamsburgh " "	1,000,000	50	145	170
J. C. and Hob'n. G. L. Co. N.J.	386,000		160	
People's " " of J. C.....			130	
Citizen's G. L. Co., Newark, N.J.				65
Hempstead " " L. I., N.Y.	40,000	100		100
Jamaica, " " " "	25,000	100		100
Citizens', Rochester, "		100	50	65
People's G. L. Co. Albany,"	1,000,000	100	45	
Mutual " Buffalo "	750,000	100	50	55
Troy G. L. Co., Troy, N. Y.....			108	
Brockport, N. Y., G. L. Co.	25,000	100		90
Baltimore G L. Co., Balt.. Md.	2,000,000	100	190	192½
People's G. L. Co., Balt., Md	2,000,000	25	27	
Hannibal G. L. Co., Hanni., Mo.	100,000	100	90	
Lewiston G. L. Co., Lewis., Me.	400,000	100		80
Chicago G. L. Co., Chicago, Ill.	2,000,000	100	135	
Derby G. L. Co., Derby, Conn..	160,000	100		80
Woonskt. G. L. Co. Woonskt, R.I.	150,000	100	100	
Fort Wayne G. L. Co. F. W., Ind		100		105
North. LibertiesG. L. Co. Phila.		25	29½	
Wilkes-Barre G. L. Co W. B. Pa.		50	70	
Washington G. L. Co., Phila....			42	43
Portland G. L. Co. Portland, Me	350,000	50	72	75
Hartford G. L. Co., Hartford, Ct	700,000	25	41	43
Boston G. L. Co., Boston, Mass.	2,500,000	500	777½	780
Chelsea G. L. Co. Chelsea, "	300,000		139	
Cambridge G. L. Co., Cam., "	700,000		132¾	
Louisville G. L. Co., Louis., Ky.			127	
Cincinnati G. L. Co , Cincin. O..			200	201
S. F. G.L. Co. San Francisco, Cal			95½	96
City G. L. Co. Montreal, Canada	1,440,000	40	125	127
Consumers G. L. (old.)Tor., Ont	600,000	50	131	
Halifax G. L. Co., Halifax, N.S..		40		145

American Mines in London.

DIVIDEND MINES.

CLOSING PRICES—Oct. 16, 4 P. M.

No. of Shares.	MINES.	Par Value of Shares.	Bid.	Total Dividends paid.	Last paid.
		£	£	£ s. d.	
10,000	Battle Mountain, c. (6240 sh.) part paid	5	....	0 10 0	Nov. 1872
15,000	Birdseye Creek, g. Cal.	4	1¾	0 14 0	June, 1874
40,000	Cedar Creek. g. Cal.	5	⅝	0 5 0	June, 1873
15,000	Chicago. s. Utah	10	4	1 12 0	May 1875
21,000	ColoradoTerrible, s.-l.Col †	5	1⅛	0 13 6	Jan. 1875
23,500	Eberhardt&Aur's, s. Nev.†	10	8	1 0 0	July, 1871
60,000	Emma, g. s. Utah (35,000 shares part paid	20	1½	3 12 0	Dec. 1872
15,000	Ferguson, g. Cal.	2	....	0 3 0	Ap'l, 1872
30,000	Flagstaff, s. Utah	10	⅝	4 2 0	July, 1873
30,000	Gold Run, hydr, Cal.	1	⅛	0 2 4	Oct., 1872
20,000	Last Chance, s. Utah	5	¾	0 14 0	July, 1873
65,000	London & California, g.†	2	⅛	0 1 0	July, 1875
15,000	Mammoth Cop.c. s. Utah	10	....	0 5 0	Dec., 1872
5,000	Mountain Chief, s. Utah..	10	....	0 4 0	Jan., 1873
54,000	Richmond Cons. s. Nev...	5	9¼	2 14 0	May, 1875
125,000	Sierra Buttes, g. Cal.†....	2	1¾	1 14 0	July, 1875
60,000	South Aurora, s. Nev.'....	5	⅜	0 14 2	Nov., 1873
15,000	Sweetland Creek, g. Cal. †	4	2¾	3 0 0	Dec., 1874
20,000	Tolima, g. s. (14,000 sh., £4/10 pd.)	5	3	0 11 6	May, 1875

NON-DIVIDEND MINES.

		Paid.	Last price.	Last Call.
		£ s.	£	
30,000	Blue Tent, hydr. g. Cal.	5 0	5/	Fully paid
12,000	Camp Floyd, s. Utah	10 0	....	" "
6,000	Clifton, s. Col.	5 0	....	Feb., 1872
10,000	Crescent, g. Cal.	10 0	....	Fully paid
10,000	Douglas. s. Georgetown, Col..	5 0	....	" "
35 000	Excelsior, Hyd. Gld. Cal.	6 0	7/	Dec., 1871
60,000	Exchequer, g. s. Cal	1 0	⅜	Fully paid
10,000	Goetzel Tunnel Co., Col.	7 0	....	" "
40,000	Holcombe Valley, g. C.	1 0	1	July, 1873
20,000	Independence, g. Cal.	5 0	2	Fully paid
20 000	I. X. L., g. s. Cal.	5 0	2½	" "
15,000	New Pacific, g. s. Nev.	0 0	5/	Dec., 1874
32,500	Ruby Consolidated, s.	100	....	Fully paid
15,000	Saturn, s. Utah	50	....	
10,000	Silver Plume, s. Col	1 0	....	Fully paid
37,500	Snow Drift. s. Col	2 0	1⅛	" "
30,000	Tecoma s. Utah	10 0	⅛	" "
14,000	Utah, g.. s.-l. Utah	5 0	⅛	" "

c. copper; g. gold; s. silver; s.-l. silver-lead; † Quoted on the London Stock Exchange. All of the above are Limited Liability Companies.

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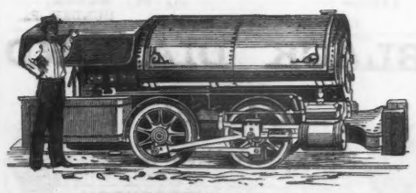

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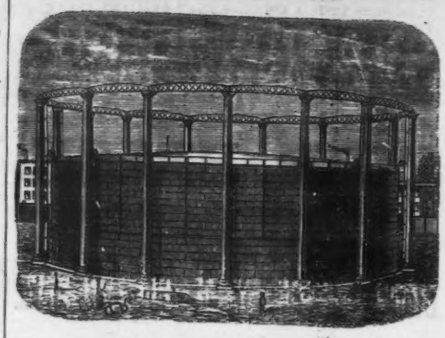

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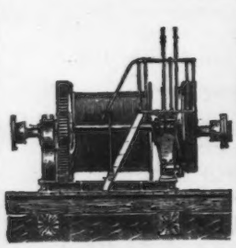

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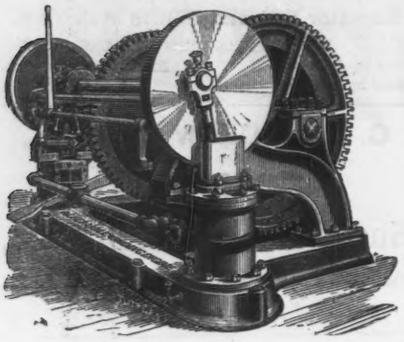

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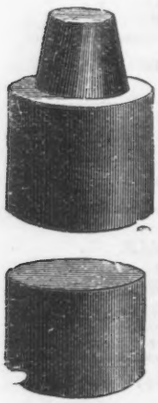

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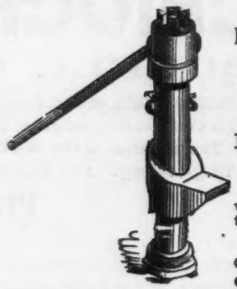

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